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PROBLEMS IN THE CONDUCT OF A CANCER DETECTION CLINIC.¹

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THE routine examination of well women in cancer detection clinics is now receiving the support of many organizations, both lay and medical. The medical support was withheld for many years for a number of reasons, and even now the objectives of cancer detection clinics are held suspect by some practitioners. It is true that some women are hypochondriacal, but they form a very small proportion of the women attending the Cancer Detection Clinic of the Royal Hospital for Women. The majority of women attending the clinic do so expecting the tests to exclude possible developing malignancy.

This paper discusses some of the more general problems associated with the conduct of the Cancer Detection Clinic at the Royal Hospital for Women during the last 12 years.

¹Part of a symposium on "Problems of Cancer Detection" held at the Royal Hospital for Women, Paddington, on October 20, 1960.

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The first problem I wish to discuss is the extent of the examination.

When the Cancer Detection Clinic was commenced in March, 1949, there were very few such clinics in the world, and we took as our objective the examination of a selected group of well women with no symptoms, and their reexamination at twelve-monthly intervals in order to determine for ourselves the value of cancer detection as an approach to the cancer problem.

I was influenced by the requirements of the American College of Surgeons in regard to cancer detection clinics, and I quote from the *Bulletin of the American College of Surgeons* for June, 1947:

Purposes: . . . To provide a complete thorough physical examination for apparently well persons in order to: (a) Detect sooner than would otherwise be discovered, early cancer, pre-cancerous lesions, areas of chronic irritation and abnormal physiological conditions which might lead to cancer. (b) Discover early manifestations of other diseases.

The value of the method having been proven to our satisfaction, that which started as a research project has become an established clinical service of the hospital.

It has been said that because the Royal Hospital for Women is an obstetrical and gynaecological hospital we should restrict our investigations to the pelvis and breast. I feel that this is wrong. Patients come for a

full examination, and even though the limitations of the examination are explained to them, they would develop a false sense of security if they had symptoms of possible carcinoma in other sites and these had not been asked about and investigated. While the clinic does not carry out cytological examination of sputa and so on, full investigation of any symptom (such as hoarseness of the voice, indigestion, hæmaturia or bleeding per rectum) is carried out before the patient is given a date for her reexamination. This often requires referral to ear, nose and throat or general surgeons for opinions. I am satisfied, after conducting this clinic for 12 years, that our policy is the correct one and is supported by the findings of the clinic.

Among 7500 patients who attended between 1949 and 1960, carcinoma was discovered in 48. The sites of these carcinomas are given in Table I. The incidence of

TABLE I.
Number of Carcinomas Detected during Examination of 7500 Patients between 1949 and 1960.

Site of Carcinoma.	Number Detected.		
	First Visit.	Subsequent Visits.	Total.
Cervix	16	6	22
Endometrium ..	0	2	2
Ovary	1	4	5
Breast	0	12	12
Kidney	0	1	1
Total	17	25	42

carcinoma of the cervix (including carcinoma-in-situ) is 1 in 293, a figure very close to the generally accepted one—that in any group of women without symptoms over the age of 30 years there will be found one carcinoma in every 300 women examined.

At the same time, a number of non-malignant conditions requiring treatment was found (Table II). The

TABLE II.
Some Non-Malignant Conditions Detected during the Examination of 7500 Patients between 1949 and 1960.

Condition.	Number Detected.	Percentage.
Chronic cervicitis	667	8.8
Cervical polyp	171	2.3
Fibromyoma	142	1.9
Leukoplakia of cervix ..	32	0.4
Ovarian cyst	46	0.6
Menorrhagia	59	0.8
Fibrocystic disease of breast (including fibroadenoma)	100	1.3
Hypertension	237	3.2
Anemia	130	1.7
Diabetes	12	0.2
Syphilis	6	0.1
Gastric and duodenal ulcer ..	9	0.1
Cholecystitis and cholelithiasis ..	25	0.3
Skin conditions, hyperkeratosis, etc. ..	13	0.2
Colitis and diverticulitis ..	14	0.2
Hæmorrhoids	42	0.7
Total	1705	22.8

findings of the first 4000 patients have been reported previously (Crawford, 1955). This paper represents a further review following 3500 additional examinations. The importance of the treatment of marked cervicitis, large fibroids and ovarian cysts other than malignant in the prevention of carcinoma is considerable and, I believe, a valuable function of the clinic. The detection of marked degrees of hypertension, peptic ulceration, diabetes and syphilis is an important measure in preventive medicine which can be credited to the clinic. It might be argued that this should not be a function of a cancer detection clinic, but it takes little time to make a blood pressure reading and test the urine; also the examination would be incomplete without these investigations.

The second problem I wish to discuss is that of the staffing of the clinic in the out-patient department and in the laboratory. The detection of early carcinoma is not easy. It requires skilled personnel in each phase of the work. The interpretation of the clinical examination, of the findings at colposcopy and of the intricacies of cytology requires all the skill that can be given by well-trained people. Registrars and clinical assistants are always of considerable help in clinics and they must be trained so that with experience they can themselves interpret the findings correctly. In the same way scanners are used in the examination of the cytological preparations. However, in both fields the expert must be present to interpret the more difficult cases.

The third problem is that of reexamination of the patient. If the patient is apparently normal, how long is it reasonable to allow her to go unexamined with little fear of a carcinoma developing?

The general policy has been to examine patients every 12 months unless some abnormality, such as hormonal mastopathy, is present, when they are seen more frequently. The patient is instructed in self-examination of the breast and asked to report immediately to her own doctor or the clinic if any apparent change appears. In the last 18 months we have endeavoured to increase the time between visits in certain groups of patients because of the snowballing numbers produced by repeated visits over the years. Patients who are post-menopausal or who have had a total hysterectomy and have no abnormality are asked to return for reexamination after 18 months, and if the patient is over 60 years of age, 24 months. All patients are requested to report alteration in bowel habits or in menstrual patterns. I do not offer this as an ideal method for the conduct of cancer detection reexaminations, but increasing numbers have induced us to adopt this approach.

Finally, what are the problems of the future? The demand for examination at the Cancer Detection Clinic has always been greater than the facilities available and this has led to rather long waiting lists. During recent months, despite the development of other cancer detection clinics, which we are very pleased to see, the demand to attend our clinic has increased considerably. This is due in part to the acceptance of the value of cancer detection by a large number of practitioners and also the publicity given to it by the Press. Expansion of the clinic in medical, nursing and clerical staff and the further extension of the cytological facilities is important.

Difficulties have arisen in the past because patients have come directly to the clinic without referral by their own doctors. Further, if such a patient did attend the clinic and a suspicious smear required that she be admitted for biopsy of the cervix, the family doctor, learning of this at a later date, might well feel resentment towards the clinic. This is unfortunate and could be overcome by the development of a better liaison with the family doctor.

Not all doctors feel that they are expert at pelvic examination and few are expert at colposcopy. While it is good that cytology is now becoming more generally available, the cancer detection clinics will still be necessary for the more detailed assessment of patients by colposcopy and other special investigations for the detection of early carcinoma.

I have discussed some of the problems of cancer detection and cancer detection clinics based on my experience in the last 12 years. With the greater demand for cancer detection, the place of the clinic will alter somewhat. While the clinic must continue to be available for anyone who wishes to avail himself of its services, the general practitioner will in future be called upon to do an increasing amount of this work. He should organize his practice so that he may offer his female patients over 30 years of age periodic examinations, including Papanicolaou smears, on the lines here

indicated. Should he be in any doubt in regard to the examination or reports, specialists interested in cancer detection are available for consultation at a cancer detection clinic. This procedure will lead to better contact between the general practitioner and cancer detection clinics. The time to consider this clinic-doctor-patient relationship is now, so that no confusion will follow the augmented public demand for cancer detection examination which is imminent.

Acknowledgements.

In conclusion, I wish to express my gratitude for the assistance afforded me by the medical staff in the clinic and our pathologists for their cytology services. I also wish to thank the nursing and clerical staff of the out-patient department, who have aided in the conduct of the cancer detection—in particular, Sister J. Robinson, without whose continued enthusiasm and careful conduct of the records the clinic would not have functioned as well as it has done.

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ANALYSIS OF ABNORMAL SMEARS.

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SINCE the Royal Hospital for Women Cancer Detection Clinic opened in 1949 the charts of those patients whose smear was returned from the pathology department with a label other than normal, have been kept separate. This file of abnormal smears now contains some 400 cards. A careful review of the case histories has shown that the three staff pathologists involved have in their reports made a clear distinction between those slides which they considered abnormal and those which they considered to contain suspicious cells. In other words, one has eliminated from review those smears which have been classified abnormal because of the presence of pus cells, naked nuclei, indeterminate cells or basal cells which, although not usually found, had none of the histological criteria of malignancy, and those smears which, although having hyperchromatic nuclei, had affixed to them the comment by the pathologist that this was possibly an artefact due to a fresh batch of staining; it was thought wise also to eliminate those few smears which were reported upon by relief pathologists who obviously were playing very, very safely. That leaves for review 247 cases gathered in the ten-year period 1949-1958, in which the pathologist's report specifically mentioned the presence of several cells, or groups, or clumps of cells which had the histological features usually associated with malignant cells. That is, these 247 smears were labelled "suspicious" by the pathologists because of the presence of cells which showed large, hyperchromatic nuclei with chromatin nets and prominent nucleoli, or bizarre or abnormal nuclear shape, or abnormal nuclear and cellular size and ratio. Not one of these smears was actually labelled definitely malignant. Those smears which were subsequently found to be from cases of carcinoma of the cervix had merely been labelled "suspicious" by the pathologist on the grounds of those features previously mentioned.

It is interesting now to follow exactly what has happened to these 247 patients. Seventy-three did not return after being told that they had a suspicious smear (29.5%); fifteen attended for only one more year before

fading from view (6.1%); that is, 35.6% of the patients with suspicious smears could not be followed up. One hundred and fifty-nine cases, therefore, can be reviewed in full. (Four patients never had a suspicious smear, yet subsequently were proven on other grounds to have a carcinoma. Two of these were in the cervix, one in the ovary, and one was an adenocarcinoma of the body.)

Very early in the clinic's development the idea was developed of injecting 1 ml. of "Oestrogenine" into a patient with a smear containing suspicious cells, and taking another smear a week later. The extraordinary result was noted that in these 159 cases, 132 smears were cleared by "Oestrogenine"—that is, the second smear was reported upon as indubitably normal by one or other of our three pathologists over this time.

Eighty-four of these patients have been followed up for five or more years, and their smears are still normal. Fifteen have been followed up for three years and their smears are still normal. Twenty-five have been followed up for two years and their smears are still normal. Six are known to have had hysterectomies elsewhere because of the "abnormal" smear. Two patients died of carcinoma of the ovary within two years. (The disease was diagnosed clinically at their next annual visit.)

That leaves 27 patients out of 159 whose smears were not rendered normal by "Oestrogenine" administration, and an analysis of these 27 cases reveals: twelve patients had preclinical carcinoma of the cervix; ten had biopsies which revealed the presence of chronic cervicitis; two died from unknown causes within two years; two had hysterectomies performed in this hospital; one never reappeared, yet after 10 years we know that she has not got carcinoma.

Comments.

In round figures, 250 cases out of the 6000 odd from the clinic during this ten-year period represents approximately a 4% incidence of cervixes which warranted closer study (on the basis of the smear alone). These were all in well women who were only accepted at the clinic with the proviso that they had no gynaecological symptoms. A further analysis of these cases shows that very close to two-thirds of the women had the suspicious smear at their first visit and the other third at other than their first visit, which might have meant that they attended the clinic for three to seven years before the suspicious smear was found. On the basis of 12 cervical carcinomas in 159 patients followed up, 7.5% of the "suspicious" smears occurred in patients who actually had or developed carcinoma.

The fact that some 35% failed to keep their trust with the clinic, once told they had a suspicious smear, is disturbing. This does not necessarily mean that they failed to receive adequate medical attention elsewhere, but the fact remains that they did leave the specialized facilities and specialized consideration which was being offered to them through this clinic. Cancer detection clinics, whether at this hospital or any other hospital, will come under heavy public scrutiny, thanks to the widespread publicity which they have received, and which originates in some part the following of the clinics, and this publicity may well change to notoriety if over 30% of the patients who most need attention or consideration are frightened away. This is a point of cancer clinic administration which must be watched very carefully.

The way in which "Oestrogenine" has cleared these smears is fascinating, but it is not possible to offer an explanation or even a rational theory as to why this should have been so. Is it a genuine observation? Is it an artefact? Owing to the universal use of this method of giving "Oestrogenine", we have in fact no controlled series to determine whether or not the mere repetition of a smear in two, three, four or five months' time would have resulted in a negative report, nor do we know really whether the treatment of chronic

¹ Part of a symposium on "Problems of Cancer Detection", held at the Royal Hospital for Women, Paddington, on October 20, 1960.

cervicitis in any of these patients would have resulted in any subsequent smears being normal. It is possible to look on these smears as false positive smears.

However, the crux of this "Oestrogenine" finding is the fact that we did not have, as far as we know in these 159 cases, one case of carcinoma of the cervix masked by the use of "Oestrogenine". The two cases of ovarian carcinoma might have been masked, but the appearance of malignant cells in this disease is notoriously chancy. However, 14 of those smears which were not cleared by "Oestrogenine" were from the patients in whom carcinoma of the cervix was subsequently diagnosed.

Is there a case for the widespread publication of what might be called the "Oestrogenine" technique? After all, if the use of these smears is to become more and more widespread in the community, more and more doctors with limited outlook in these matters will be faced by a pathology report that the smear for Mrs. X. contains suspicious cells. Is the practitioner, on the basis of this, going to perform or recommend a hysterectomy or amputation of the cervix, or is he going to wait and see? Would the clinic be entitled to publicize this technique and confidently assert that the use of "Oestrogenine" will immediately separate potential cancers from those which one might call false positives? Clearly, further work must be done.

Was the pathological reporting of these smears adequate for clinical purposes? Is it reasonable, or is it possible, to ask pathologists to give a definite opinion as to whether cancer cells are present or not? After all, if it is reasonable or possible for pathologists to do this, then this whole discussion becomes redundant, because of the 159 suspicious smears followed up, only 14 were from cases of malignancy. Putting it another way, there were 145 false positives.

Comparisons.

These results and implications can be briefly compared with those of two leading overseas clinics.

Soule (1957) reported from the Mayo Clinic a 7.8 per thousand incidence of preclinical carcinoma of the cervix in 66,501 primary cervical smears from pooled patients—that is, symptomatic and asymptomatic. More interestingly there was a false "suspicious" rate of approximately 2.4 per thousand and biopsy material from nearly two-thirds of this group "revealed the source of the atypical cells mirrored in the smear".

Mussey and Soule (1958) in a wider review of carcinoma-in-situ at the Mayo Clinic state their opinion that a smear exhibiting suspicious cells is potentially as significant as one showing cells labelled probably or definitely malignant, for two reasons: firstly, the precise interpretation of these cells will vary from one pathologist to another, and secondly, in 50% to 60% of their cases of carcinoma-in-situ associated areas of epithelial dysplasia or basal cell hyperactivity were present which might have been reflected in the smear even earlier.

Peckham and Greene (1957) reviewed a group of women who had cervical biopsies for abnormal cervical smears. Four hundred and eighty-nine patients had epithelial abnormalities insufficient for a diagnosis of pre-invasive carcinoma; of those patients followed up by repeated biopsies over several years, 10% eventually did develop carcinoma-in-situ, 40% apparently lost the abnormality in their smears (or, rather, it could not be subsequently found) and 50% retained the abnormality.

Their figure of 10% is reasonably close to our own figure of 7.5% from a smaller series.

Conclusions.

The accumulated experience of this clinic makes it clear that there are grave dangers inherent in cancer detection programmes, all too easily forgotten in the glorious romance of the one discovered case. The discerning reader will not have failed to note that 12 pre-

clinical cervical carcinomata in well women were detected, but six genital cancers were missed in their early stages. (There were mitigating factors in all these six cases, but patients' relatives are hardly likely to be judicial.) All this happened despite careful work in a clinic staffed by gynaecologists or trainee residents well aware of the difficulties.

From the point of view of a specialized clinic, there is the problem of losing patients with suspicious smears at the point at which they most need careful review and assessment, if necessary by colposcopy, punch biopsies or formal cone biopsies, and so on. The answer may lie in more regular follow-up, and above all an attempt to spend more time with the patients to develop in them a sensible attitude to their investigations, to prevent their being driven into the hands of hysterectomists.

However, the 4% under review in this paper have, for practical and administrative purposes, been virtually swamped by the 96% of the bulk of the clinic, and as publicity becomes more widespread, the more likely it is that patients with absolutely healthy cervixes will continue to accumulate in the clinic to the detriment of the 4% who, on the basis of these figures, should have a closer follow-up.

Does the answer lie in the direction that specialized clinics should exist only for the review of clinically abnormal cervixes or abnormal smears, leaving the bulk of the smears to be taken by the patients' own doctor? The 36% of this clinic's patients with abnormal smears who vanished presumably turned to a doctor who had their personal trust, and in most cases this would have been their family doctor.

However, the widespread adoption of the Papanicolaou smear immediately raises greater dangers. Pathologists dealing in large numbers are bound to find it difficult sometimes to declare a slide definitely malignant or non-malignant; the percentage returned with the label "suspicious" or "abnormal" might be higher than 4% if patients with gynaecological symptoms are included in the sampling, and unless great care is exercised, little imagination is required to foresee that the final cost to the community may well be staggering.

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THE PLACE OF COLPOSCOPY IN CANCER DETECTION.¹

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COLPOSCOPY has been used as an aid in the detection of early carcinoma of the cervix for many years. Its use has been mainly restricted to the continent of Europe with a few notable exceptions (Scheffey *et alii*, 1955; Youssef, 1957; Coppleson, 1959).

A colposcope was reintroduced into the Cancer Detection Clinic of the Royal Hospital for Women in September, 1958, and in view of the differing opinions concerning its value, a clinical experiment was carried out to see if any lesions could be found by colposcopy which an experienced observer using a bright light did not detect. One thousand two hundred and thirty-six new patients were examined

¹ Part of a symposium on "Problems of Cancer Detection" held at the Royal Hospital for Women, Paddington, on October 20, 1960.

by two members of the staff of the clinic independently—one examining the cervix with the naked eye and the other examining the cervix with the colposcope.

This paper reports the results of this investigation together with the colposcopic findings of an additional 976 new patients examined at the Cancer Detection Clinic during the last two years.

Procedure.

After a full clinical history had been taken and a physical examination performed, a smear was taken from the cervix and the findings of the examination were recorded on a history sheet. Initially the terms normal, cervicitis and abnormal were used, but it was found very quickly, after experience with colposcopy, that the terms ectopic columnar epithelium, transformation zone and leukoplakia were of greater value. The examiner also recorded his opinion of the cervix as non-suspicious and requiring no treatment, non-suspicious but requiring treatment, or suspicious, with biopsy recommended. The patient was then examined in a separate part of the clinic by the colposcopist, who recorded his findings on a colposcopy card together with his opinion, using the same formula as the initial examiner. The findings of the clinical examination were then transcribed onto the colposcopy card and the cards punched for analysis.

Results.

The colposcopic findings are presented in Table I.

The abnormal findings form a small percentage (only 4%) of the total, but this must be considered in relation

TABLE I.
Colposcopic Findings.

Colposcopic Finding.	Clinical Experiment Series.		Total.	
	Number.	Percentage.	Number.	Percentage.
Normal	392	31.7	678	30.6
Ectopic columnar epithelium .. .	145	11.7	256	11.6
Transformation zone .. .	479	38.8	900	40.7
Senile cervicitis .. .	97	7.8	160	7.2
Cervical polyp .. .	85	6.9	132	6.0
Leukoplakia .. .	5		6	
Mosaic .. .	24		42	
"Leukoplakic ground" .. .	3		8	
Atypical transformation zone .. .	1	3.1	10	3.0
Microcarcinoma .. .	4		19	
	1		1	
Total .. .	1236	100.0	2212	100.0

to the relative normality of the patients examined. With few exceptions, the age of the patients examined was between 30 and 60 years, and when placed on the waiting list for the Cancer Detection Clinic, none of the patients complained of any symptoms. If they had done so, they would have been transferred to one of the gynaecological clinics. Many of the patients (about 20%) had had some previous treatment to the cervix, diathermy or a repair operation. Nevertheless, among the 1236 new patients in the clinical experiment group, there were seven cases of carcinoma of the cervix and one of carcinoma of the breast, and among the total of 2212 new patients, there were 10 cases of carcinoma of the cervix and two of carcinoma of the breast.

The analysis of the agreement between the macroscopic and colposcopic appearances in the 1236 patients in the clinical experiment is given in Table II.

There was a large group of cervixes judged non-suspicious both macroscopically and colposcopically. Many were interpreted macroscopically as normal, which were judged colposcopically transformation zone or ectopic columnar epithelium. This was not an important misinterpretation. However, 26 cervixes were classified macroscopically as non-suspicious, normal, transformation

zone, ectopic columnar epithelium or senile cervicitis when there were abnormal colposcopic findings—leukoplakia, mosaic or "grund". In the biopsy material taken from these abnormal areas there were abnormalities ranging from thickening of the epithelium to invasive carcinoma. Many specimens showed some basal-cell hyperplasia or metaplasia. There were seven other abnormal cervixes with leukoplakia or mosaic and one microcarcinoma recognized as suspicious macroscopically as well as colposcopically.

Five cervixes were considered macroscopically and colposcopically to be non-suspicious, in which cytology led to biopsy, and diagnoses were made of microcarcinoma or carcinoma-in-situ. One of these cases was that of a polyp, in which treatment was recommended, although carcinoma was not suspected.

TABLE II.
Macroscopic and Colposcopic Agreement and Non-Agreement in 1236 Patients.

Colposcopic Findings.	Macroscopic Findings.		
	Non-Suspicious, No Treatment.	Non-Suspicious, Treatment Advised.	Suspicious, Biopsy Recommended.
Non-suspicious, no treatment	1084 ¹	13	6
Non-suspicious, treatment advised .. .	25	75 ¹	—
Suspicious, biopsy recommended .. .	26		7 ¹

¹ These figures indicate agreement in findings by both methods.

Of the 38 abnormal cervixes, seven were evident both with the colposcope and to the naked eye, while 26 were evident with the colposcope but not to the naked eye, and five were not detected by either method (Table III).

TABLE III.
Results of Colposcopy in 1236 Patients in Clinical Experiment.

Method of Detection.	Nature of Abnormality.		
	Microcarcinoma.	Carcinoma-in-situ.	Hyperplasia, Metaplasia.
Detected macroscopically and colposcopically .. .	1		6
Detected colposcopically but not macroscopically .. .	1		25
Not detected macroscopically or colposcopically .. .	1	4 ¹	

¹ One in a polyp, which was removed.

Two of the three microcarcinomas were recognized with the colposcope. All of the four carcinomata-in-situ were small (about 1.0 to 1.5 mm. in diameter). Two were in the endocervical canal and therefore not detectable by colposcopy, one was close to the squamo-columnar junction and was not detected, and the other was in the polyp. While it was disappointing not to detect all these cases by colposcopy, the fact that two were in the canal and all were very small emphasizes the difficulty in recognizing these lesions.

Colposcopy also led to the recognition of 25 abnormal cervixes, which would have remained unrecognized otherwise. While there is little evidence that basal-cell hyperplasia or metaplasia develops into carcinoma, as Hinselmann would have us believe, I consider it valuable that these areas have been recognized. Navratil (1957) found that 9% of his abnormal colposcopic findings were due to carcinoma, either invasive carcinoma or carcinoma-in-situ. We found two cases among 33 abnormal cervixes.

A further three cases of carcinoma of the cervix have been detected by colposcopy following the completion of the clinical experiment. One case of carcinoma-in-situ was detected both colposcopically and by smear. The other

two cases were detected by colposcopy alone; the Papanicolaou smears were normal, but carcinoma, invasive in one case and *in situ* in the other, was found on biopsy.

As far as the detection of carcinoma of the cervix is concerned, colposcopy has proved its worth by detecting two cases not detected by the Papanicolaou smear, and by confirming the site of three others. It did not detect one microcarcinoma and four carcinoma-in-situ which were found by the Papanicolaou smear.

Colposcopy also has led to the detection of areas of hyperplasia of the cervical epithelium, which were not detected on normal examination. It has given us a method of observation of areas of cervical epithelial hyperplasia, led to a more intelligent appreciation of the pathological changes occurring in the cervix, and meant an even more careful examination of the patient.

The findings recorded here justify the continued use of colposcopy.

Summary.

The colposcopic findings of 2212 new patients at the Cancer Detection Clinic of the Royal Hospital for Women, Sydney, are presented.

In a clinical experiment involving 1236 new patients who did not complain of any symptoms, one carcinoma and 25 areas of cervical epithelial hyperplasia, not detected on normal examination, were found on colposcopic examination.

Acknowledgements.

This investigation was made possible by the combined interest and cooperation shown by my colleagues in the Cancer Detection Clinic—Dr. G. Crawford (Director), Dr. D. Howell, Dr. W. Garrett and Dr. H. Patterson.

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THE EFFICIENCY OF PRESENT CANCER DETECTION METHODS.¹

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THOSE who are engaged in the day-to-day running of a cancer detection clinic must always have in the back of their minds the horrid suspicion that a patient who actually has cancer has been falsely reassured that all is well. In this paper an attempt is made to assess the efficiency of methods used at the Cancer Detection Clinic of the Royal Hospital for Women with a view to seeing whether the present techniques are worth while.

Graham Crawford, the founder of the clinic, has described elsewhere the methods used (history, physical examination, Papanicolaou smear, colposcopy, X-ray examination and so on) and has ably reviewed the results

¹Part of a symposium on "Problems of Cancer Detection" held at the Royal Hospital for Women, Paddington, on October 20, 1960.

of the work done (Crawford, 1955 and 1961). From his papers it is easily seen that the results in Sydney at the Royal Hospital compare most favourably with those from similar clinics overseas. However, they do not give an indication of the efficiency of cancer detection methods in general.

The Clientele.

From the first, only symptom-free patients have been examined at the Cancer Detection Clinic. On booking, the patient is asked categorically by the booking clerk whether she has any symptoms or complaints, and if a positive answer is obtained, she is advised to consult her own doctor or is given an appointment to attend a general out-patient clinic. The figures from the Cancer Detection Clinic, therefore, refer to symptomless women only.

From the statistical point of view it is important to realize that the ages of the women attending the clinic are mostly between 35 and 45 years—that is, they are mostly 25 years younger than the national age for death from the disease (Figure 1). Fewer cases of cancer, therefore,

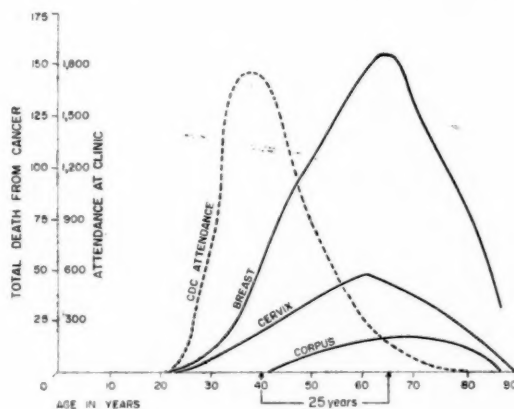


FIGURE 1.

The solid lines show the total number of deaths among women from cancer of the breast, the cervix and the corpus uteri at different ages. The dotted line shows the age incidence of women at their first visit to the Cancer Detection Clinic. It is seen that the mode of age at the first visit precedes the mode of age of cancer deaths by some 25 years.

can be expected at the clinic than from the population at large. The patients are generally examined annually from the original date of booking, so that a number of them have been examined as many as 11 or 12 times. Naturally, some have failed to keep their appointments, but in practice it is found that approximately 50% of patients booked more than five years ago are still attending regularly. This means that the only valid figures for assessing the efficiency of cancer detection methods are those obtained at the first visit.

Incidence of Cancer.

There appear to be no national figures for the incidence of cancer available for Australia. However, the New Zealand Government Statistician issues such figures, and as the death rate from cancer among women is similar in both countries, it seems reasonable to use New Zealand figures for the present calculation (Figure 1).

From the incidence figures in a large population the actual number of patients who, having crossed the doorstep of the Cancer Detection Clinic for their first visit, can be expected to develop clinically diagnosable cancer in the ensuing 12 months can be calculated. This gives us a yardstick against which we may match the number of cancers found at the clinic in these symptomless women. It thus provides an index of efficiency.

Efficiency of Cancer Detection.

Table I gives the total number of cancers found in 7745 consecutive patients at the Cancer Detection Clinic at the first visit and against these is shown the expected number. The total number found and the total expected number correspond, but on closer scrutiny it is seen that the fractions which make up these totals differ in some respect. With cancer of the breast, the ovary, the corpus uteri and the rectum the expected numbers and numbers found are

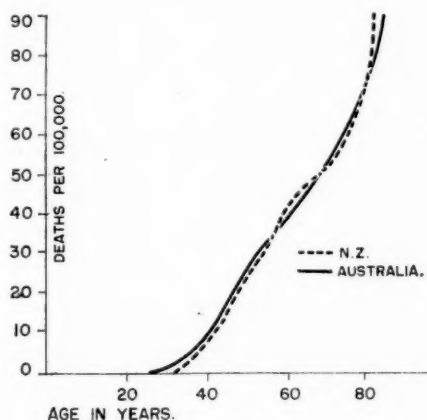


FIGURE II.

New Zealand death rates of cancer of the uterus do not differ significantly from Australian death rates. Similar graphs may be drawn for cancer at other sites. Assuming that the results of treatment are the same in both countries, it is justifiable to use New Zealand incidence figures for the calculation of expected numbers of cases in this paper. No such Australian data appear to be available.

similar. In the case of cancer of the cervix, six times the expected number were found, whereas with cancer of the stomach and colon it is probable that some cases have been overlooked. In other words, these figures suggest that if a cancer can be seen or felt it will be found before symptoms bring the patient to the doctor.

TABLE I.
Detection of Cancer at the First Visit to the Clinic.

Site of Cancer.	Number of Cases Expected.	Number of Cases Found.
Breast	6.4	6
Cervix	2.5	15
Body of uterus	1.1	1
Ovary	1.3	1
Stomach and colon	3.3	0
Rectum	1.0	(1) ¹
All cancers (excluding skin) ..	10.9	24

¹ The case of cancer of the rectum given in parentheses is not strictly in this group as she was the 7854th patient examined.

The best results are found with cancer of the cervix. The present figures support the contention that the earliest phases of cancer of the cervix are present long before the disease is usually diagnosed, and that, if not macroscopically obvious, these cases will be found with the aid of the Papanicolaou smear backed up by colposcopy. To the great success in this field the clinic owes its usefulness. The methods used appear to detect not only those cancers of the cervix which, in the ordinary course of events, would be diagnosed in the course of one year, but also those which would be found in the subsequent five years as well. By contrast, the lack of success in the diagnosis of symptomless cancer of the stomach and colon is prob-

ably a reflection of our inability with present methods to select patients suitable for more detailed examination. Many X-ray examinations and sigmoidoscopic examinations have been done at the clinic, but the over-all results are not encouraging. Preliminary studies have been made with methods of routine testing for occult blood in the faeces, but as yet a method simple enough for easy application in a large clinic has not been evolved. Work on this problem is proceeding.

The Long-Term View.

After the first examination, the patients are requested to come for examination annually, as it is obvious that cancer may develop at a later date. As a measure of this likelihood, the incidence figures quoted earlier have been related to life tables to produce the expected number of patients attending the Cancer Detection Clinic who will develop cancer between the date of booking and their seventieth birthday. These figures, which were kindly prepared by Professor Lancaster of the Department of Mathematical Statistics, are shown in Table II. With them the numbers of cancers found to date are given. Patients who have booked recently have attended on one or two occasions only, many have not yet reached the "cancer" age (Figure I) and a number have defaulted in attendance, so that no strict correlation can be sought. However, Table II does delineate the ultimate goal in cancer detection.

TABLE II.
Detection of Cancer in 7695 Patients from the Date of Booking to the Seventieth Birthday.¹

Site of Cancer.	Number of Cases Expected	Number of Cases Found to Date.
Breast	242	18
Cervix	82	22
Body of uterus	59	2
Ovary	55	5
Stomach	63	0
Colon	105	0
Rectum	37	(1)
Kidney	—	1
All cancers (excluding skin) ..	879	48

¹ Some 2000 patients have been followed for five years. Approximately 50% of patients examined more than five years ago have not been seen recently; many of these will be over 70 years of age.

Summary and Conclusions.

If a cancer can be seen or felt it will be found with the present cancer detection methods before symptoms bring the patient to the doctor. In the case of cancer of the cervix, physical examination, with Papanicolaou smear supported by colposcopy, will find not only those cancers which will ordinarily be diagnosed in the subsequent 12 months, but those as well which would not declare themselves for some five or six years.

Acknowledgements.

I would like to thank Professor H. O. Lancaster for his kind help and criticism of the statistics here presented and members of the Department of Illustration of the University of Sydney for their assistance in the preparation of the figures. The unenviable task of sorting through the many records to produce the basic material on which these present calculations were based was essentially in the hands of Miss J. E. Robinson with the assistance of Miss H. McIntyre, to whom I express my appreciation.

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THE COMPOSITION OF FLUIDS FOR THE CARE OF PATIENTS WITH ABNORMAL ELECTROLYTE SITUATIONS.

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It is the purpose of this discussion to draw attention to certain useful solutions that may aid the physician and paediatrician in hospital practice with respect to the care of many patients with fluid and electrolyte problems. These solutions have been designed to fulfil the requirements and principles suggested previously (Cheek, 1954) and have been in use at the Royal Children's Hospital since 1957, and are now available to the profession in general.

The three major needs for patients—adults or infants—are: (i) maintenance fluids and electrolytes—to replace obligatory (or normal) losses; (ii) the repair of body tissues after previous (abnormal) fluid and electrolyte loss; (iii) the quick replacement of contemporary loss of fluids and electrolytes (for example, from gastric or intestinal suction). These needs must be met in each 24-hour period.

Maintenance Fluid and Electrolyte.

The body continually loses water—even after death water loss through the skin continues. These losses are constituted by urinary water loss, insensible water loss, sweat loss and stool water loss. The expenditure of water by the body is closely related to metabolism, which in turn is roughly related to the surface area. It can be stated that the fluid requirement to maintain the body at all ages is about 1 litre per square metre of body surface per day, except in the neonatal period, when a quantity of 700 ml. per square metre per day is all that is required. Since metabolism bears little relationship to weight, the calculation of maintenance requirements for all ages (and for patients confined to bed in a semi-fasting state) on a weight basis is not a simple figure. However, if one is obliged, for the sake of argument or custom, to define normal water requirements on a weight basis, then the following data are important. In the neonatal period the fluid requirement is 70 ml. per kilogram per day. During infancy and up until the end of the first year, the figure is 120 ml. per kilogram per day. From one year to five years (or up until the weight of 20 kilograms) the fluid requirement is again 70 ml. per kilogram per day. From five to nine years (20 to 30 kilograms) the figure falls to 60 ml. per kilogram per day. After this age the adult figure of 40 ml. per kilogram per day will supply obligatory needs. However, the use of weight as an index of normal water requirements is best avoided.

More correctly it should be stated that 120 to 150 ml. of water are needed for every 100 Calories metabolized in the infant, child or adult. Darrow (1959) sets out the following simplified figures for fluid requirements based on calories expended per day during fasting. These figures can be placed on a pocket card for reference. The new-born infant requires 45 to 50 Calories per kilogram; a child weighing three to 10 kilograms requires 60 to 80 Calories per kilogram; a child of 10 to 15 kilograms requires 45 to 65 Calories per kilogram; a child of 15 to 25 kilograms requires 40 to 50 Calories per kilogram; a child of 25 to 35 kilograms requires 35 to 40 Calories per kilogram; a child of 35 to 60 kilograms requires 30 to 35 Calories per kilogram; an adult requires 25 to 30 Calories per kilogram.

From these figures, and from the known water requirements of 120 to 150 ml. per 100 Calories, the needs of any individual patient can be quickly calculated.

To ensure a urine that is not highly concentrated half of the fluid requirement is excreted as urine water. One third of the fluid requirement is lost by the skin and the rest is excreted as stool water.

Since electrolyte is lost in the urine, in the stool and from the skin each day the major fixed ions must be included in the maintenance fluid. If this fluid contains sodium, potassium and chloride ions at concentrations of 20 mEq/l., then the correct volume of fluid needed will also supply the required amount of electrolyte. Since most patients needing intravenous fluid are in a semi-fasting state, enough glucose should be present to ensure a protein sparing effect. However, patients cannot receive adequate calories by the use of a 5% glucose solution. The exact composition of maintenance fluid is shown in Table I.

In circumstances in which renal water requirement is not fulfilled, such as anuria, maintenance fluid is at once reduced by 50% or more and the patient is allowed to lose weight each day. This circumstance is the responsibility of the specialist in the field. When chronic disease of the kidney is present, with a reduced nephron population, with each remaining nephron hypertrophied and under a solute diuresis, the expenditure of urine water is high. Here maintenance water must be increased. In diseases in which potassium excretion is retarded, as in adrenal insufficiency, in gross renal disease or during surgical operation, or in respiratory acidosis, a potassium-free maintenance fluid is used (see table).

Repair of Body Tissues.

We must consider the repair of tissue losses that have been incurred by previous vomiting, diarrhoea and abnormal renal excretions. This loss must be made good or partly made good during the first 12 hours of hospital care, so that enough time is available for the fulfilment of maintenance needs during the second half of the 24-hour period. While clinical examination and history and weighing of the patients are of utmost importance it is also necessary to determine the state of the renal function. Serum electrolyte concentrations with blood urea or non-protein nitrogen concentrations are desirable. In addition it is becoming apparent that a rapid but accurate biochemical method for the determination of extracellular volume would be of great value. This aspect has been discussed at length elsewhere (Cheek, 1961).

Clinically or chemically certain facts must be obtained if possible. The weight loss, the water loss relative to the salt loss, the degree of potassium deficiency, the state of acid-base balance and the state of respiration are all important. In patients admitted to hospital with water and/or electrolyte loss it will be found, as a general rule, that weight loss is in the region of 7% to 10% of the body weight. In extreme conditions, such as diabetic coma, this figure may approach 15%. The usual needs of water for repair in a patient admitted with dehydration are in the order of 80 to 100 ml. per kilogram (or 150 ml. per kilogram in diabetic coma) to be given over the first 12 hours. Such a solution will contain sodium, potassium, chloride and lactate depending on the metabolic disturbance of acid-base balance. If electrolyte loss is more severe than water loss, hypotonicity of the extracellular fluids will exist, and the use of isotonic or near-isotonic solutions is indicated. Let us assume for the present that hypotonicity or isotonicity is present. The first step prior to the administration of fluid in the dehydrated patient is to assess the renal function. If a child is of normal height and expected weight (prior to dehydration) it is unlikely that severe renal disease is present. If the patient has voided shortly before admission this information is in favour of renal function. If the blood urea level is only slightly elevated glomerular filtration is not severely impaired. If the serum potassium concentration is low (it seldom is during the initial haemo-concentration) no immediate danger will result from the prompt use of potassium. If doubt exists as to the advisability of the immediate use of a potassium-containing solution, or as to the degree of renal reserve, a primer solution is given—20 ml. per kilogram per hour for the first hour or two, or until the patient voids. If hypotonicity of the body fluid is present a saline

TABLE I.
Composition of Solutions for Use in the Care of Patients with Abnormal Electrolyte Situations.

Type of Solution.	Name of Solution.	Concentration of Electrolyte (mEq/l.).						Glucose (Grammes per 100 ml.).	Maximal Rate.	Use of Solution.
		Ammonium.	Sodium.	Potassium.	Magnesium.	Chloride.	Lactate.			
Maintenance.	Standard maintenance.	—	20	20	—	20	20	5%	1 litre per square metre per 12 hours.	To provide the daily requirements of electrolyte and water for patients in bed in a semifasting state.
	Potassium - free maintenance.	—	40	—	—	20	20	5%	As above.	For use as above, but when renal function is suspect.
	For metabolic acidosis.	—	115	40	—	115	40	—	80 ml. per kilogram per 12 hours.	To repair losses of fluid and electrolyte when adequate renal function exists without hypernatremia.
Tissue repair.	For metabolic alkalosis.	—	100	40	—	140	—	—	80 ml. per kilogram per 12 hours.	As above.
	3% saline.	—	510	—	—	510	—	—	Over six to eight - hour period.	For severe sodium loss and treatment of concentration deficit (for example, water intoxication).
Contemporary replacement.	Gastric replacement.	70	60	20	2	152	—	—	15 ml. per kilogram per hour.	To restore losses from suction or drainage from hour to hour.
	Intestinal replacement.	—	137	13	2	102	50	—	15 ml. per kilogram per hour.	As above.
	Saline lactate.	—	150	—	—	100	50	—	20 ml. per kilogram per hour.	For use as an initial solution when tonicity and renal function are unknown, but acidosis is suspected (for example, diabetic coma).
Primer.	Ringer lactate.	—	127	4	—	110	24	—	—	For use as an initial solution when tonicity, renal function and acid-base balance are unknown.

lactate solution is useful in this direction—particularly if metabolic acidosis is also associated, as in diabetic

insulin will thereupon exert an effect (Guest and West, 1959). Moreover the need for fluid and electrolyte is urgent in diabetic coma. The composition of saline lactate solution is such as to favour the shift of the plasma pH towards the alkaline side.

If the state of tonicity or acidity of the extracellular fluid is in doubt then Ringer's lactate solution can be used as a primer. If metabolic alkalosis is suspected (such as after persistent vomiting) isotonic saline is suitable. In the early stages of dehydration with electrolyte loss, some degree of shock is incipient and the first aim is to expand extracellular volume rapidly to establish renal flow, and if possible, correct to some extent the extracellular hydrogen ion concentration.

With respect to the so-called tissue repair solutions for metabolic acidosis and alkalosis in Table I, these solutions will replace extracellular losses of sodium and chloride during metabolic disturbances of acid-base balance. They will help to restore the normal pH. They will only partly restore loss of cell potassium, since this ion is returned completely to the cell only after several days, and during the continued receipt of this ion. In patients with pyloric obstruction, intestinal obstruction or persistent vomiting from any other causes, we can confidently expect the existence of metabolic alkalosis. Such patients need chloride and potassium, and to lesser extent sodium, for restoration of cell electrolyte structure, acid-base balance and extracellular volume (Cooke *et al*, 1952). About 80 to 100 ml. per kilogram of the solution indicated in the table will restore electrolyte losses except for potassium. Therefore this ion must be administered in amounts above maintenance requirements by one route or another during subsequent days prior to removal of the cause of the vomiting. If vomiting continues the amounts of all three electrolytes must be increased. After the completion of rehydration and extracellular electrolyte replacement over the first 12 hours the administration of maintenance fluid is begun.

In patients with gastro-enteritis, persistent diarrhoea from other causes or severe loss of fixed cation—such

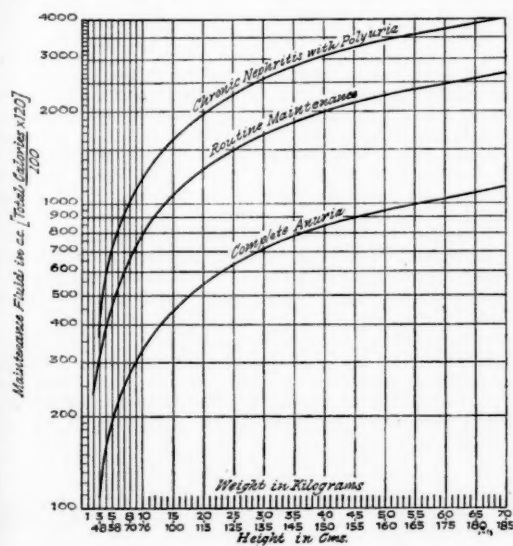


FIGURE 1.

For convenience of plotting, a semilogarithmic grid has been used to define the maintenance fluid requirement from infancy to adult life. The maintenance fluid is plotted against the height or weight. For convenience the approximate water requirements in anuria and chronic nephritis are also included.

coma. In diabetic coma it is wise to give up to 40 or 50 ml. per kilogram of saline lactate solution during the first two or three hours, since acidosis will be reduced and

as in diabetic coma—80 to 100 ml. per kilogram per 12 hours can be given to restore acid-base balance and electrolyte loss. This solution is called repair solution for metabolic acidosis and is similar to Darrow's solution. After the use of such repair solution routine maintenance solution is instituted during the last 10 or 12 hours of the first 24-hour period. Thus the patient admitted to hospital with severe gastro-enteritis will receive about 20 ml. per kilogram of primer solution, 80 to 100 ml. per kilogram of tissue repair solution and 1000 ml. per square metre (or 120 to 150 ml. per 100 calories) of maintenance fluid during the first 24 hours. It is the policy of many paediatric centres to use potassium concentrations of no more than 40 mEq/l. With such solutions the maximal rate of administration is 13 ml. per kilogram per hour. With régimes as outlined above the patient will receive about 4 to 5 mEq per kilogram of potassium during the first 24 hours. It is known that the deficit of body potassium in metabolic conditions is likely to be anywhere from twice to three times this amount.

During the second day of treatment, if losses of fluid and electrolyte continue, it will be necessary to give half the amount of repair solution again, followed by maintenance fluid. Here clinical discretion is vital. In the majority of instances, with restriction of oral feeding, diarrhoea or vomiting subsides in the first 36 hours. With the restoration of hydration and the repair of tissue electrolytes (except potassium) the reestablishment of oral feeding is begun. Maintenance fluid is then withdrawn and oral fluids rich in potassium are offered. The aim is to complete parenteral fluid therapy as soon as possible.

The Problem of a Severe Sodium Loss Relative to Water Loss.

In some patients, particularly adults, large amounts of sodium are lost from the persistent escape of fluid—for example, from a biliary or intestinal fistula. Within a matter of days about 1000 mEq. of sodium may be lost and the patient can pass into a state of coma with peripheral failure. The plasma sodium level will fall to about 110 mEq/l. with haemoconcentration and a degree of urgency develops, since the life of such a patient is in the balance. Such a patient has received fluid with insufficient sodium and the situation is beyond a stage where volume is sacrificed to preserve concentration. Consequently there is a greater sodium deficit relative to water loss. There is need for correction of this concentration deficit. This need is best approached by the use of 3% saline (Danowski, Winkler and Elkington, 1946). Since body sodium is distributed over the entire body water (McDowell, Wolf and Steer, 1955), the amount of sodium required will be the estimated body water (about 50% to 60% of the body weight) multiplied by the change in concentration from normal. For a 60-kilogram adult the total body water would be about 30 kilograms, and if the plasma sodium concentration was 110/mEq/l., then the amount of sodium required would be $(140 - 110) \times 30 = 900$ mEq. Since 3% saline contains 510 mEq/l. of sodium, or approximately 0.5 mEq. per millilitre, about 1800 ml. of 3% saline should be given over six to eight hours.

For the sake of simple calculation it is clear that the departure in concentration, multiplied by the body weight, will give the approximate amount of 3% saline required in millilitres—that is, $(140 - 110) \times 60 = 1800$ ml.

Similarly in water intoxication the above procedure represents the mode of attack. Such an approach is not needed very often in paediatrics, although in fibrocystic disease, during heat stress with severe sodium chloride loss, this procedure will frequently reverse right heart failure and is preferable to the use of isotonic saline (Cheek, 1954; Barbero and Sibinga, 1959). For most instances of hypotonic dehydration with greater sodium than water loss—as in adrenal insufficiency—isotonic saline (100 ml. per kilogram) is indicated during the first 12 hours of hospital treatment.

Hypernatræmia with Severe Water Loss.

The mechanism of hypernatræmia, which is frequently seen with gastro-enteritis, has been discussed at length elsewhere (Cheek, 1960). In this circumstance renal function is deranged, with gross loss of body water and relatively small losses of sodium. The situation appears also in patients with diabetes insipidus when water intake has not been optimal. The therapeutic approach demands that the concentration of sodium, which may be 155 to 200 mEq/l., must be slowly reduced to normal levels. Rapid decreases in osmotic pressure in the fluids of the central nervous system precipitate convulsions (Colle, Ayoub and Raile, 1958). At the same time there are usually significant losses of body potassium and lowering of serum calcium concentration. Excessive sodium loading in the presence of potassium deficiency gives rise to a gross increase in body sodium or what one might call sodium intoxication (Cheek and West, 1956). In the initial treatment of hypernatræmia with gastro-enteritis it has been my policy to use 40 mEq/l. of potassium chloride in a 5% solution of glucose at 10 ml. per kilogram per hour for 10 hours, provided renal function is active. If renal function is in doubt the potassium chloride is exchanged for sodium chloride until urine flow is established. Calcium gluconate (10 ml. of a 10% solution) is added to each flask. This procedure is then followed by the use of standard maintenance fluid. Indeed if the repair solutions mentioned cannot be readily prepared, maintenance solutions can be used in their place as repair solutions, with or without potassium, depending on renal function.

The Need for Replacement of Contemporary Loss.

The concentrations of electrolyte present in the fluids of the stomach and small intestine vary to some extent from patient to patient. It has been found at this hospital over the last four years that solutions which mimic the electrolyte concentrations of gastro-intestinal fluids are very satisfactory for the replacement of current losses from fistula or from suction. Every six hours account is made of the volume of fluid removed and this volume is restored intravenously with the appropriate gastric or intestinal fluid (Table I). Since the introduction of these replacement fluids at this hospital the problems of nursing care, laboratory aid and general management of certain patients have been simplified. The maximal rate of administration of these solutions is 15 ml. per kilogram per hour. The composition of these solutions is essentially similar to those prepared by Cooke and Crowley (1952). As pointed out by these authors, the special preparation of exactly similar solutions for each patient is time-consuming, wasteful and expensive. "On most hospital services such mixtures will not be made, and saline solution alone will probably be administered by a busy house staff as replacement therapy."

In summary, attention has been drawn to the use of certain practical solutions for hospital patients with the more common problems of fluid and electrolyte loss. The solutions fall into the areas for the three major requirements which must be fulfilled for any patient on any particular day.

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A PRACTICAL APPROACH TO THE COMMON COLD: A PRELIMINARY REPORT.

By D. T. BURKE, B.Sc., M.B., B.S.,
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Treat your cold and it will be better in a fortnight;
without treatment, it will last two weeks.

—A COMMON SAYING.

THERE are few subjects more controversial than the management of the common cold, and the foregoing comment, with variations, expresses the confusion of the average man. Popular cures and preventives range from the sublime to the ridiculous and certainly there are people who appear to have benefited from such simple measures as carrying charms, chewing cloves or consuming alcohol. Others have relied on the vitamins, on vaccines or on the various antihistamines. The purpose of this paper is to present a physiological approach to the management of most cases of the common cold between the ages of four years and fifty.

As the result of observations in an extensive number of cases of upper respiratory tract infections, I have reached the conclusion that most of the features of the common cold are related to overbreathing, and that, if this is controlled, the symptoms of the cold are minimized and the course is shortened. The following physiological principles seem to be responsible for this.

Physiological Principles.

To begin with, the coryzal reaction is non-specific. It does not automatically implicate a coryzal or influenzal virus. This response may be provoked by morbilli, rubella or pertussis, by allergy, by teething in infancy and by the nerve gases. It is also seen in mild oxygen poisoning (Comroe *et alii*, 1945), and may be a premonitory sign of the fit in eclampsia (Linton Snaith, 1960).

Although common colds vary in severity and extent, for the purposes of discussion four processes can be distinguished in the model cold—nasal and paranasal manifestations, malaise, hyperventilation and cough. The course of a model cold is influenced by other factors, including individual responsiveness, exertion and time of day. The criteria for the clinical recognition of overbreathing will be discussed in detail in a further paper.

In the progressive development of the condition, the key processes are malaise and hyperventilation. These are interwoven, for malaise is regularly accompanied by overbreathing, which, in turn, creates a secondary malaise. With compulsory exertion, the position resembles that of the partially exhausted runner—for a given effort, there is much more breathing than when the runner is fit and rested.

The matter is further complicated because hyperventilation, provoked by malaise or by nasal obstruction, then

induces a hitherto unreported reflex nasal and paranasal congestion which sustains its cause. This reflex provides the key to the partial understanding of the "cold in the head" phenomenon and is apparently linked with the arterial carbon dioxide tension. In a suitable subject, it is easy to demonstrate the activation of the reflex by overbreathing and then its suppression by breath-holding. The reflex may be blocked by systemic therapy with certain of the sympathomimetic amines. The combination of additional air volumes to be moved and the limited energy available leads naturally to mouth breathing and, eventually, cough. In her review, Ames (1955) attributes the dryness of the mouth to simple evaporation. However, at least two other factors are probably involved—decreased salivary secretion to conserve body water, and increased awareness of the primary and secondary effects of dryness of the mouth and pharynx, to the extent of pain with dysphagia.

A diurnal variation is recognizable in the symptomatology of the common cold and allied conditions. The morning hours, after rising, may be relatively free from symptoms and signs, as is seen so often when one is dealing with sick children. As the day wears on, in the model cold there is premature fatigue with accentuation of malaise, hyperventilation and cough. This diurnal variation is linked with the central mechanism for the gradual conditioning for evening rest.

Once triggered, there is no saying how far these reactions may extend, or which process, if any, may predominate. In tracing the common cold back to a coordinating centre, it becomes apparent that hypothalamic dysfunction is involved, or, as Haynes (1958) has expressed it "autonomic dyspraxia". The special role of hypocapnia indicates that there is depression of the next higher centre, the anterior ascending reticular formation of the mid-brain (Bonvallet and Dell, 1956). Finally, in some subjects, the anorexia induces functional cerebral hypoglycemia (Wyke, 1959) which would operate in synergism.

For nuisance value, the strength of the common cold stems from individual susceptibility to the cause and to the resultant complex chain of physiological effects. From the therapeutic viewpoint, it is this very complexity which provides ample scope for intervention. The best strategy is to bypass considerations of cause and concentrate on limiting the effect by concurrent measures.

Suggested Management.

Simple acute nasal obstruction or rhinorrhoea with lachrymation usually responds rapidly to decongestant therapy with one of the newer preparations for oral use. Combined therapy using an antihistamine not only attends to possible allergy, but also allows for the introduction of a hypnotic side effect, if desired. Local decongestion may be required initially, especially in the evening or in the presence of nausea. When nasal and paranasal congestion is secondary to hyperventilation, restraint in breathing is advantageous in reducing the requirement for specific measures.

The malaise encountered may be classed as either primary or secondary, and there is much individual variation. Nature has arranged for the recruitment of the hyperventilation syndrome to exaggerate primary malaise. Because of this, respiratory restraint or carbon dioxide replacement may bring about a dramatic improvement and reduce the disability and the requirement for analgesics.

In view of the diurnal variation mentioned earlier, the strongest supportive measure in the management of the common cold is bed rest during the afternoon and evening of the developmental stage. This helps to suppress malaise and also the urge to overbreathe and cough. Suitable restriction of activity is indicated during the same period on successive days. During rest, increased fluid and carbohydrate intake counteracts any secondary malaise associated with functional cerebral hypoglycemia.

Dealing with hyperventilation itself is not easy. The first steps are to clear the nasal airway and abolish mouth breathing. The rate and depth of breathing can then be

brought under control fairly rapidly and, in fact, this becomes easier as the carbon dioxide deficit is gradually overcome. Persistence with respiratory restraint will be found to be initially difficult, but it is efficacious in reducing malaise, upper respiratory tract congestion and pharyngeal symptoms. It may also bring about a feeling of relaxation within the chest and a decreased urge to cough.

With this general management, the cough phase is unlikely to develop. If cough is already established, and still unproductive, it may be checked by the foregoing measures; but for complete suppression of an established cough, fairly strong motivation and an initial afternoon bed rest are necessary. Conversely, afternoon sport may unmask a latent cough, as is seen in slow or incomplete recoveries.

The therapeutic role of the lozenge is not clear. Some patients benefit with increased salivation and reduction in mouth breathing when using this form of local and occupational therapy. For those with marked symptoms of dry mouth, pharyngitis and dysphagia, lozenges would be a source of annoyance.

Discussion.

The pernicious feature of the common cold is the strong tendency of the sufferer to aggravate his own condition. Thus the smoker may not refrain from smoking until forced to do so; therapy with nasal sprays or salicylates may be overdone; few persons would voluntarily agree to bed rest while still able to continue work; hyperventilation and anorexia go uncorrected; and, finally, when there is the urge to cough, the natural instinct is usually followed.

Among the classical measures to control the common cold, the two outstanding solitary therapies are the salicylates and alcohol. Properly used, these sometimes succeed when the reaction is evanescent. Failure is more usual, because the attack is too narrow in scope and is bypassed by adaptation.

The approach favoured in this presentation is a very broad one which repeatedly breaks the chain of physiological events so that the common cold loses its identity. To convert theory into practice, these initial instructions may be given to the patient: (i) Breathe slowly through the nose at normal rate and depth. (ii) Keep the nose clear, preferably with the tablets prescribed, and use nasal drops if necessary, sufficient to keep the nose clear. (iii) Resist the urge to cough and avoid talking. (iv) When a cold is developing, avoid exertion and go to bed early in the afternoon. (v) Take aspirin in some form as required for the discomfort. (vi) "Feed a cold." Eat and drink about every two hours. (vii) As the cold fades, avoid fatigue and remain indoors at night.

In the application of these principles, certain repercussions may be anticipated. One is the matter of the afternoon period when the reaction is developing. Although a worker may still feel capable of continuing, his efficiency will be impaired. The longer-term view is that a few hours lost by arrangement at a time when travelling home is less fatiguing is preferable to a few days' absence through necessity. Ideally, a day-and-a-half disability period should be granted, because the condition in the morning may be deceptively good pending the diurnal worsening, and an initial survey suggests that this may be acceptable in principle to employers. For the executive, two successive afternoons would be a useful compromise.

With regard to cough, there is a superabundance of preparations available for the suppression of cough or the improvement of expectoration or both. However, the cheapest and preferred method of control of the simple unproductive cough, as seen in the common cold, is voluntary restraint supported by prevention of mouth-breathing. Where motivation and will power are inadequate, the antitussive may be used as an aid.

As was pointed out earlier, if the approach discussed in this paper is followed, the cough process is unlikely to develop. A time may come when the harsh repetitive dry cough of the recovery phase of the common cold will

be regarded as a social misdemeanour akin to yawning or expectorating in public.

In conclusion, a favourable mention should be given concerning the effect of television for influencing people to remain indoors at night during winter. This aids the rapid recovery from the common cold.

Summary.

1. The control of the model common cold depends on the relief of nasal congestion and the avoidance of over-breathing and cough.

2. The strongest supportive measure is bed rest in the afternoon and evening of the developmental stage.

3. The rationale for this approach is presented, and measures for the practical implementation are discussed.

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THE VALUE OF REPEATED COMMUNITY-WIDE COMPULSORY MASS CHEST X-RAY SURVEYS IN CASE DETECTION FOR PULMONARY TUBERCULOSIS IN WESTERN AUSTRALIA.

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IN Western Australia in the post-war years 1948 to 1952, case-finding in tuberculosis by chest X-ray examination was mainly concentrated on "priority groups": (i) Suspect patients referred to the Perth Chest Clinic for examination or films of country patients (King, 1952; Heymanson, 1952); (ii) hospital in-patients and out-patients (Anderson, 1952); (iii) mental hospital patients (Prendergast and King, 1950); (iv) migrants and other population groups such as aborigines (King *et alii*, 1951; Edwards *et alii*, 1957). In these groups it was thought that most infectious pulmonary tuberculosis might be found in relation to the effort expended within the availability of medical personnel and equipment. From 1952 onwards, although this work has been carried on with some variation, mass miniature radiographic surveys of the community have been carried out more or less continuously, in an attempt to search out the hidden unknown sufferers from this disease.

Although there have been a number of earlier publications of the results of such surveys (Woodruff, 1956; McNaughton, 1956; Rubinskin, 1956), this article is contributed as the record of the first complete survey of an entire mainland Australian State under health Act legislation; comparative results of repeated surveys to date are also given.

The surveys were declared compulsory by the Commissioner of Public Health in a specified age class, persons being exempt from examination if they had been examined in the previous 12 months. The age groups were as follows: July 1, 1952, to March 1, 1954, 16 to 75 years; March 2, 1954, to January 1, 1959, 16 years and no upper limit; January 2, 1959, to January 1, 1960, 18 years and no upper limit; January 2, 1960, to date, 21 years and no upper limit.

TABLE I.
Districts Visited on Three Occasions.¹

District.	First Survey, 1952.			Second Survey, 1956.			Third Survey, 1960.		
	Number of Microfilms.	Number of Cases of Tuberculosis.	Rate per 1000.	Number of Microfilms.	Number of Cases of Tuberculosis.	Rate per 1000.	Number of Microfilms.	Number of Cases of Tuberculosis.	Rate per 1000.
Kalgoorlie ..	8057	8	1.0	6788	7	1.0	6012	6	1.0
Boulder ..	3030	3	1.0	2633	5	1.9	2317	4	1.7
Coolgardie ..	886	0	0	512	1	1.9	368	0	0
Yilgarn ..	240	0	0	1156	0	0	934	0	0
Dundas ..	929	0	0	1012	0	0	903	2	2.2
Total ..	12,642	11	0.9	12,101	13	1.1	10,534	12	1.1

¹ When comparing numbers examined, allowance must be made for population changes and alteration of age groups examined. Gold miners were excused from these surveys, as they undergo annual chest X-ray examination.

From July, 1952, onwards, experience was gained in the larger country towns, before the work was extended to Perth in August, 1954. The first survey of Perth and Fremantle metropolitan areas was completed in March, 1957, and the second in August, 1959.

The radiographic equipment used initially comprised two Stanford Model II 35 mm. transportable mass chest radiographic units with automatic f1.5 lens camera, P.E. timer, four-valve 200 milliamp. generator and "Dynamax" 25 R.A. tube, transported in a specially designed van equipped with a dark room. A diesel 25 K.V.A. trailer generator was used when no suitable local power was available. In 1954 these were superseded by two 35 mm. Schonander FFS-4 transportable mass chest radiographic units with automatic f0.7 mirror camera, P.E. timer, Stanford S.R. 50 milliamp. 90 kilovolt tankhead generator

with 2.3 mm. tube. These units, as well as producing technically better microfilms, had the advantage of being able to operate from ordinary domestic power supplies. In 1956, Schonander FFS-4 70 mm. transportable mass chest radiographic units with automatic f0.7 mirror camera and P.E. timer, with similar Stanford tankhead generators, were first used.

At the Perth Chest Clinic a hand-operated 35 mm. lens Zeiss camera tunnel unit with a Watson KX 500 generator was in use initially; this was replaced by a Schonander 35 mm. unit in 1954, and this in turn by a Schonander 70 mm. unit in 1956 and an Odelca 70-VII-U 70 mm. unit in 1959. At the Fremantle Chest Clinic a Stanford 35 mm. unit installed in 1953 was replaced by a Watson 35 mm. automatic camera unit with a KX 500 generator in 1954.

TABLE II.
Districts Visited on Two Occasions.¹

District.	First Survey.			Second Survey.		
	Year.	Number of Microfilms.	Number of Cases of Tuberculosis.	Year.	Number of Microfilms.	Number of Cases of Tuberculosis.
Albany ..	1952	6239	7	1958	6688	3
Geraldton ..	1953	6121	1	1958	6475	3
Bunbury ..	1953	6500	10	1958	7122	2
Busselton ..	1953	3371	2	1958	3286	1
Midland Junction ² ..	1954	8411	9	1957	8059	6
Guildford ..	1954	2073	2	1957	1569	0
Basendean ..	1954	4107	1	1957	3950	3
Baywater ..	1954	7411	6	1957	7321	3
Perth Road Board ..	1954	31987	37	1957	29527	18
Harvey ..	1954	2161	0	1958	3286	0
Manjimup ..	1954	3415	3	1958	5481	1
Northam ..	1954	4497	1	1959	4990	1
Collie ..	1954	6202	4	1960	5106	5
Bridgetown ..	1954	2005	2	1960	1551	1
Mosman Park ..	1955	3662	5	1958	3073	1
Peppermint Grove ..	1955	950	1	1958	625	1
Claremont ..	1955	5907	1	1958	3952	2
North Fremantle ..	1955	1744	1	1958	1277	0
East Fremantle ..	1955	3748	2	1958	2740	2
Fremantle City ..	1955	14186	12	1958	13064	9
Cottesloe ..	1955	4634	5	1958	4186	0
Nedlands ..	1955	11158	8	1958	10194	0
Subiaco ..	1955	9196	16	1958	7699	4
Perth City ..	1955	50574	61	1958	41274	19
York ..	1955	1399	5	1959	1425	1
Cunderdin ..	1955	1265	1	1960	997	1
Kellerberrin ..	1955	1487	0	1960	1209	0
Merredin ..	1955	2271	4	1960	2042	1
Carnarvon ..	1956	1408	4	1959	1369	1
Melville ..	1956	10115	7	1959	12590	6
Belmont ..	1956	7438	11	1959	7413	1
Canning ..	1956	6195	7	1959	6824	4
Gosnells ..	1956	3563	5	1959	3326	4
Katanning ..	1956	2637	3	1960	2119	0
Narrogin ..	1956	2936	1	1960	2748	1
Wagin ..	1956	1952	1	1960	1514	1
Kojonup ..	1956	1502	2	1960	1323	2
Moora ..	1956	1908	3	1960	1420	0
Tammin ..	1956	435	2	1960	404	0
Esperance ..	1956	710	1	1960	970	0
Wyalkatchem ..	1957	706	0	1958	152	1
Armada-Kelmscott ..	1957	3195	3	1959	2999	2
South Perth ..	1957	13353	11	1959	12586	5
Kwinana ..	1957	2011	2	1959	1989	0
Rockingham ..	1957	1038	1	1959	848	1
Cockburn ..	1957	1551	1	1959	2459	1
Total ..		269,090	271		251,227	113

¹ When comparing numbers examined allowance must be made for population changes and alteration of age groups examined.

² Includes Western Australian Government Railways Workshops.

³ Partial survey only.

TABLE III.
Country Districts Visited on One Occasion (Mostly Small Centres).

District.	Number of Microfilms.	Number of Cases of Tuberculosis.	Rate per 1000.	District.	Number of Microfilms.	Number of Cases of Tuberculosis.	Rate per 1000.
1953:				1957:			
Mullewa	954	0	0	Pingelly	1032	0	0
Northampton	1031	0	0	Plantagenet	2586	3	1.1
1956:				Preston	1408	1	0.7
Nungaria	353	1	2.8	Quairading	946	0	0
Swan	3065	1	0.3	Serpentine-Jarrahdale	995	1	1.0
Toodyay	717	0	0	Tabeland	206	0	0
Westonia	103	0	0	Tambellup	519	0	0
Williams	749	1	1.3	Three Springs	499	0	0
1957:				Upper Blackwood	1370	0	0
Augusta-Margaret River	2138	0	0	Victoria Plains	1001	1	1.0
Balingup	717	1	1.4	Wandering	206	0	0
Beverley	1098	2	1.8	Wanneroo	708	0	0
Brookton	713	0	0	West Arthur	651	0	0
Broomehill	328	0	0	Wickepin	735	0	0
Bruce Rock	1254	0	0	Wongan-Ballidu	1121	0	0
Capel	975	1	1.0	1958:			
Carnamah	804	1	1.2	Black Range	74	0	0
Chittering	557	0	0	Cue Daydawn	280	1	3.5
Corrigin	1098	0	0	Denmark	941	1	1.0
Cranbrook	526	0	0	Drakesbrook	1072	0	0
Cuballing	321	0	0	Laverton	247	0	0
Dalwallinu	1142	5	4.4	Leonora	537	2	3.7
Dardanup	718	1	1.4	Marble Bar	318	1	3.1
Darling Range	2915	5	1.7	Meekatharra	418	1	2.4
Dowerin	743	1	1.3	Menzies	112	0	0
Dumbleyung	754	0	0	Mount Magnet	418	1	2.4
Gingin	365	0	0	Nullagine	165	1	6.0
Gnowangerup	1451	0	0	Tableland	206	0	0
Goomalling	790	0	0	Wiluna	287	0	0
Greenbushes	429	0	0	Woodanilling	345	0	0
Irwin	331	0	0	Yalgoo	221	0	0
Kondinin	676	1	1.5	1959:			
Koorda	469	0	0	Ashburton	342	0	0
Kulin	609	0	0	Phillips River	210	0	0
Kununoppin-Trayning	451	0	0	Port Hedland	738	1	1.3
Lake Grace	994	1	1.0	Roebourne	347	0	0
Marradong	558	0	0	Upper Gascoyne	173	0	0
Mandurah	1191	1	0.8	Shark Bay	91	0	0
Mingenew	557	0	0	1960:			
Morawa	792	1	1.3	Broome	594	1	1.7
Mount Marshall	457	1	2.2	Chapman Valley	759	0	0
Mukinbudin	401	0	0	Dandaragan	124	0	0
Mundaring	3312	4	1.3	Hall's Creek	582	0	0
Murray	2020	0	0	Murchison	292	0	0
Nannup	967	0	0	Wyndham	750	1	1.3
Narembeen	802	0	0	West Kimberley	662	1	1.5
Nyabing-Pingrup	448	0	0				
Perenjori	645	1	1.5				
				Total	67,774	48	0.7

A mobile X-ray caravan, powered by a diesel prime mover and equipped with a dark-room and attached 25 K.V.A. Onan petrol-driven generator, became available and was used for the smaller country towns in 1956. Initially this was equipped with a Stanford Model II 35 mm. unit, but this was replaced by a Odelca 70-VII-U 70 mm. mirror camera unit in 1959.

Some of the surveys in far-off towns in 1958, 1959 and 1960 were carried out by the Mines Department mobile X-ray caravan used concurrently for annual chest X-ray examination of miners. This unit has a diesel prime mover and a Stanford 90/50 unit with an Odelca 70 mm. unit, and is equipped with a 12 K.V.A. generating unit. By courtesy of the Commonwealth Railways, this unit

was also carried on the "tea and sugar" train in April, 1960, to complete the survey on the Transcontinental line to the South Australian border.

Usually the transportable equipment was set up in local authority halls, but R.S.L. halls, school halls and church halls were frequent alternative sites. For the metropolitan surveys, the static units at the Perth Chest Clinic and the Fremantle Chest Clinic were alternative centres for persons to report for examination.

At the static units and in major surveys, it has been the practice in this State, in the interests of efficiency, and to prevent unnecessary recalls for large films, to request subjects to strip to the waist, with the provision of gowns for women. Portable cubicles were erected as

TABLE IV.

State of Western Australia: First Metropolitan Survey, August, 1954, to March, 1957, showing Age, Sex and Stage of Disease (N.T.A. Classification).¹

Age Group	Males: Stage of Disease.			Total.	Females: Stage of Disease.			Total.	Persons: Stage of Disease.			Total.
	Minimal.	Moderate.	Advanced.		Minimal.	Moderate.	Advanced.		Minimal.	Moderate.	Advanced.	
15-19	—	—	—	—	1	—	—	1	1	—	—	1
20-24	2	—	—	2	1	—	—	1	3	—	—	3
25-29	—	7	—	7	6	2	—	8	9	—	—	15
30-34	—	—	1	1	4	3	—	7	6	10	1	17
35-39	3	10	1	14	11	—	—	16	8	21	1	30
40-44	9	6	3	18	4	—	—	8	13	10	3	26
45-49	6	6	2	14	2	5	—	7	8	11	2	21
50-54	3	16	4	23	3	4	—	7	6	20	4	30
55-59	5	12	2	19	3	2	—	5	8	14	2	24
60-64	2	9	—	11	—	2	—	2	2	11	—	13
65-69	—	1	1	2	1	1	—	2	4	10	1	15
70-74	—	2	1	3	—	2	—	2	—	4	1	5
75 and over	—	1	1	2	1	—	1	2	1	1	2	4
Total	35	85	16	136	31	36	1	68	66	121	17	204

¹ Total number of persons examined, 197,206; total number of tuberculous infections discovered, 204—1.03 per 1000; additional eight radiologically and clinically active lesions, and additional 14 bacteriologically positive in subsequent years not included in this total. Migrants: arrived since 1948, 29 (14.2%); arrived prior to 1948, 38 (18.6%); total, 67 (32.8%). Ex-servicemen: Australian, 63 (30.9%); others, 3 (1.0%); total, 66 (31.9%).

TABLE V.

State of Western Australia: First Country Survey, July, 1952, to November, 1960, showing Age, Sex and Age of Disease (N.T.A. Classification).¹

Age Group (Years).	Males: Stage of Disease.			Total.	Females: Stage of Disease.			Total.	Persons: Stage of Disease.			Total.
	Minimal.	Moderate.	Advanced.		Minimal.	Moderate.	Advanced.		Minimal.	Moderate.	Advanced.	
15-19	—	—	—	—	1	1	—	2	1	1	—	2
20-24	2	2	1	5	1	—	—	1	3	2	1	6
25-29	—	2	2	4	1	1	—	2	1	3	2	6
30-34	1	4	3	8	2	5	—	7	3	9	3	15
35-39	—	2	4	6	2	2	—	4	2	4	4	10
40-44	—	4	3	7	2	2	1	5	2	6	4	12
45-49	1	6	4	11	3	3	2	8	4	9	6	19
50-54	1	7	3	11	1	1	1	3	2	8	4	14
55-59	5	6	2	13	1	1	—	2	6	7	2	15
60-64	—	5	—	5	—	1	—	1	—	6	—	6
65-69	1	4	1	6	—	—	—	—	1	4	—	5
70-74	—	3	3	6	—	—	—	—	—	3	3	6
75 and over ..	—	2	4	6	—	—	1	1	—	2	5	7
Total	12	47	30	89	14	17	6	37	26	64	36	126

¹ Total number of persons examined, 152,240; total number of cases of tuberculosis discovered, 126 (0.83 per 1000); additional nine radiologically and clinically active infections and additional nine bacteriologically positive in subsequent years not included in this total. Migrants: arrived since 1948, 26 (20.6%); arrived prior to 1948, 23 (18.2%); total, 49 (38.8%). Ex-servicemen: Australian, 23 (18.2%); British, 3 (2.4%); total, 26 (20.6%).

TABLE VI.

State of Western Australia: Second Metropolitan Survey, August, 1957, to August, 1959, showing Age, Sex and Stage of Disease (N.T.A. Classification).¹

Age Group (Years).	Males: Stage of Disease.			Total.	Females: Stage of Disease.			Total.	Persons: Stage of Disease.			Total.
	Minimal.	Moderate.	Advanced.		Minimal.	Moderate.	Advanced.		Minimal.	Moderate.	Advanced.	
15-19	—	—	—	—	2	1	—	3	2	1	—	3
20-24	1	—	—	1	—	—	—	—	1	—	—	1
25-29	2	2	—	4	—	—	—	—	2	2	—	4
30-34	2	1	—	3	1	5	1	7	4	6	1	11
35-39	2	2	—	4	1	—	—	1	3	2	—	5
40-44	2	2	1	5	1	3	—	4	3	5	1	9
45-49	3	3	—	6	2	—	1	3	5	3	1	9
50-54	5	5	—	10	2	3	—	5	7	8	—	15
55-59	1	6	—	7	—	—	—	—	1	6	—	7
60-64	2	3	—	5	—	—	—	—	2	3	—	5
65-69	—	4	—	4	—	—	—	—	—	4	—	4
70-74	2	—	—	2	—	1	—	1	2	—	—	2
75 and over ..	—	1	1	2	—	—	—	—	—	1	1	2
Total	23	29	2	54	9	14	2	25	32	43	4	79

¹ Total number of persons examined, 177,993; total number of cases of tuberculosis discovered, 79 (0.44 per 1000); additional eight radiologically and clinically active infections and additional five bacteriologically positive in subsequent years not included in this total. Migrants: arrived since 1948, 16 (20.3%); arrived prior to 1948, 18 (22.8%); total, 34 (43.1%). Ex-servicemen: Australian, 21 (26.6%); British, 1 (1.3%); total, 22 (27.9%).

TABLE VII.

State of Western Australia: Second Country Survey (Incomplete), showing Age, Sex and Stage of Disease (N.T.A. Classification).¹

Age Groups (Years).	Males: Stage of Disease.			Total.	Females: Stage of Disease.			Total.	Persons: Stage of Disease.			Total.
	Minimal.	Moderate.	Advanced.		Minimal.	Moderate.	Advanced.		Minimal.	Moderate.	Advanced.	
15-19	—	—	—	—	1	—	—	1	1	—	—	2
20-24	—	1	—	1	2	—	—	2	2	—	—	2
25-29	—	—	—	—	—	—	—	—	1	—	—	1
30-34	—	2	—	2	1	—	—	1	1	2	—	3
35-39	—	—	—	—	1	1	1	3	1	1	1	3
40-44	3	2	1	6	—	—	—	—	3	2	1	6
45-49	2	2	—	4	2	1	—	3	2	3	—	5
50-54	1	4	—	5	—	—	—	—	1	4	—	5
55-59	1	2	1	4	—	—	—	—	1	2	1	4
60-64	1	1	2	4	—	—	—	—	1	1	2	4
65-69	2	1	1	4	1	—	—	1	3	1	1	5
70-74	1	2	—	3	—	—	—	—	1	2	—	3
75 and over ..	—	—	2	2	—	—	—	—	—	—	2	2
Total	12	17	7	36	8	2	1	11	20	19	8	47

¹ Total number of persons examined, 85,335; total number of cases of tuberculosis discovered, 47 (0.55 per 1000); additional five radiologically and clinically active infections and additional four bacteriologically positive in subsequent years not included in this total. Migrants: arrived since 1948, 8 (17%); arrived prior to 1948, 9 (19.1%); total, 17 (36.1%). Ex-servicemen: Australian, 16 (34%); British, 0; total, 16 (34%).

a routine, except for smaller surveys where caravans were employed. However, since the beginning of 1960, on country surveys examination has been carried out on the clothed subject with removal of any obvious radio-opaque material, such as jewellery, tobacco tins, etc., and heavy over-clothes.

The surveys were planned and directed entirely by medical personnel, and preliminary personal contact was always made by the Director with the local authorities concerned.

In the metropolitan area, usually only one X-ray unit was employed at a time, and two teams, each comprising one radiographer, one driver-clerk, one typist and one nurse-receptionist split the week-day sessions between them

and operated continuously from 8.30 a.m. to 6 p.m. and from 7 p.m. to 9 p.m. and change of location was possible without delay.

The majority of the country surveys were carried out by a smaller team comprising one radiographer and one driver-clerk and the unit operated from 9 a.m. to 12 noon and from 2 p.m. to 3.30 p.m., with occasional night sessions (7 to 9 p.m.) if indicated. In the country, local women's organizations, such as the Country Women's Association, the Red Cross and R.S.L. auxiliaries, were coopted to act as receptionists, and a typist was either made available by the local authority, or volunteered or was engaged.

All surveys were publicized well in advance as necessary under the Health Act in the Government Gazette of

TABLE VIII.

State Western Australia: Third Country Survey (Partial only), showing Age, Sex and Stage of Disease (N.T.A. Classification).¹

Age Group (Years)	Males: Stage of Disease.				Total.	Females: Stage of Disease.				Total.	Persons: Stage of Disease.				Total.
	Minimal.	Moderate.	Advanced.			Minimal.	Moderate.	Advanced.			Minimal.	Moderate.	Advanced.		
15-19	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
20-24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
25-29	—	—	—	—	—	—	1	—	—	1	—	1	—	—	1
30-34	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35-39	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
40-44	—	—	—	—	—	1	—	—	—	1	1	—	—	—	1
45-49	2	—	—	—	2	—	1	—	—	1	2	1	—	—	3
50-54	—	—	—	—	—	1	1	—	—	2	1	1	—	—	2
55-59	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
60-64	—	2	—	—	2	—	—	—	—	—	—	2	—	—	2
65-69	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
70-74	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
75 and over ..	—	3	—	—	3	—	—	—	—	—	—	3	—	—	3
Total	2	5	—	—	7	2	3	—	—	5	4	8	—	—	12

¹ Total number of persons examined, 10,534; total number of cases of tuberculosis discovered, 12 (1.1 per 1000); additional two radiologically and clinically active infections not included in this total. Migrants: arrived since 1948, 0; arrived prior to 1948, 5 (41.8%); total, 5 (41.8%). Ex-servicemen: Australian 3 (25%); British, 0; total, 3 (25%).

Western Australia and in three daily newspapers, with build-up publicity in local papers, by poster displays, by Australian Broadcasting Commission, commercial station and Flying Doctor radio announcements, and by notices in doctors' surgeries. Talks were often also given to local groups of Rotary clubs, Apex clubs, Road Board meetings, etc. From 1956 onwards, alphabetical call-up notices were distributed on a house-to-house basis in towns and suburbs of Perth and Fremantle, with the aid of Boy Scouts and similar organizations.

Visits to outlying centres were planned to coincide with important local events, such as annual race meetings, and persons in such districts were given the alternative of reporting to the local hospital in the six months following the visit of the unit, or, of course, to a chest clinic.

An attempt was made to check all attendances against electoral rolls, and special follow-up circulars were sent to those not attending. This often proved effective, defaulters subsequently reporting for examination. Some persons were fined for non-attendance at surveys.¹

A definite fall of attendances in 1958 followed Press reports emphasizing radiation hazards, but reassurance from the Commonwealth Minister for Health—quoting the report of the National Radiation Advisory Committee to the Prime Minister in September that year—brought this subject into proper perspective, and attendances then gradually returned to normal expectations. All possible precautions had been taken in February that year to reduce radiation from the X-ray units by filtration with 2 or 3 mm. of aluminium filters in the X-ray beam, by proper coning of the latter, and by provision of plastic lead gonad shields.

¹ Annual Reports, Tuberculosis Control Branch, Western Australia, 1955, 1956.

Special analyses of surveys were carried out, and indicated that non-attendances were mostly due to persons having left the district or being temporarily away from the district, to old age and sickness, to clerical errors, to the forwarding address being unknown, or to the addressees having had a chest X-ray examination during the previous twelve-month period.

The usual checks against rolls and such analyses showed the difficulties due to population movement, etc., of estimating the percentage of the declared class of the district specified reporting for examination; but when allowance was made for this, the over-all results showed that the surveys were particularly well received by the public, and attendances averaging 85% to 95% of those eligible to attend were the most common. Some were lower, some were higher; in some instances inflow from surrounding areas increased the percentage above the estimated 100.

An attempt was made to reach a high standard of technical efficiency in regard to the radiomicrographs and the large film retakes; and regular liaison was carried out with the Commonwealth X-Ray and Radium Laboratory and the State X-Ray Laboratory in this regard.

The State X-ray engineer provided efficient service maintenance for the equipment; a reserve unit was available for immediate use, but breakdowns were negligible.

For the country surveys all film was developed on the spot, and in the earliest surveys medical officers visited the towns to examine the microfilms; but from 1954 all films were forwarded after being developed by road, rail, or air if necessary to save time, to the Perth Chest Clinic, where the practice has been to project the films to about 17 in. by 14 in. with an efficient projector. The chest physicians reading the films have been fully trained

TABLE IX.

State of Western Australia: All Surveys (Country and Metropolitan), showing Age, Sex and Stage of Disease (N.T.A. Classification).¹

Age Group (Years)	Males: Stage of Disease.				Total.	Females: Stage of Disease.				Total.	Persons: Stage of Disease.				Total.
	Minimal.	Moderate.	Advanced.			Minimal.	Moderate.	Advanced.			Minimal.	Moderate.	Advanced.		
15-19	—	—	—	—	—	4	2	—	—	6	4	2	—	—	6
20-24	5	3	1	—	9	3	1	—	—	4	8	4	1	—	13
25-29	2	11	2	—	15	9	4	—	—	13	11	15	2	—	28
30-34	6	14	4	—	24	8	13	1	—	22	14	27	5	—	46
35-39	5	14	5	—	24	9	14	1	—	24	14	28	6	—	48
40-44	14	14	8	—	36	8	9	1	—	18	22	23	9	—	54
45-49	14	17	6	—	37	7	10	3	—	20	21	27	9	—	57
50-54	11	32	7	—	50	9	9	1	—	19	20	41	8	—	69
55-59	12	26	5	—	43	4	3	—	—	7	16	29	5	—	50
60-64	5	20	2	—	27	—	3	—	—	3	5	23	2	—	30
65-69	6	18	3	—	27	2	1	1	—	4	8	19	4	—	31
70-74	4	7	4	—	15	—	3	—	—	3	4	10	4	—	18
75 and over ..	—	7	8	—	15	1	—	2	—	3	1	7	10	—	18
Total	84	183	55	—	322	64	72	10	—	146	148	225	65	—	468

¹ Total number of persons examined, 623,368; total number of cases of tuberculosis discovered, 468 (0.75 per 1000—includes five aborigines); additional 32 radiologically and clinically active infections and additional 32 bacteriologically positive in subsequent years not included in this total. Migrants: arrived since 1948, 89 (19%); arrived prior to 1948, 93 (20%); total, 182 (39%). Ex-servicemen: Australian, 126 (26.9%); others, 7 (1.5%); total, 133 (28.4%).

in tuberculosis work, and experienced for some years in the treatment of pulmonary tuberculosis with actual handling of patients in sanatoria or chest hospitals, before being considered sufficiently knowledgeable for this work. The method of dual reading has been employed, with two readers working in conjunction, and every attempt has been made to change the sequence of readers every 200 to 400 exposures to obviate the problem of fatigue, for which object viewing has been usually kept to the first work of the day.

The results of examinations are sent by post—by card if they are normal (bulk postage), or by letter if they are abnormal—as soon as possible after reading, usually a matter of days only; and close liaison is effected with the patient's private medical practitioner.

Attention was paid to the economics of the project by the smallness of teams used, by forward planning to

admitted to hospital in subsequent years, have been excluded (see tables).

Every effort has also been made to exclude patients suffering from pulmonary disease due to atypical mycobacteria, known to be present in this State.¹

TABLE X.
Mass Survey Findings: Allied Ex-Service Personnel.

Survey.	Australian.			Others.	Total.
	World War I.	World War II.	Both Wars.		
First metropolitan	12	47	4	3	66
First country	9	14	0	3	26
Second metropolitan	3	17	1	1	22
Second country ¹	5	11	0	0	16
Third country ¹	1	2	0	0	3
Total	30 ¹	91 ¹	5	7	133

¹ To date.

Includes one female.

Results.

The first complete examination of the State between July, 1952, and November, 1960, disclosed 330 sufferers from infectious pulmonary tuberculosis among 349,506 persons examined, a finding of 0.94 or approximately one per 1000 examinations (Tables IV and V).

The first examination of the Perth metropolitan area between August 1954, and March, 1957, discovered 204 persons with infectious pulmonary tuberculosis in 197,266 examinations, a rate of 1.03 per 1000 (Table IV). The second coverage of the Perth metropolitan area between August, 1957, and August, 1959, examined 177,993 persons and disclosed a further 79 persons with infectious pulmonary tuberculosis, a finding of 0.44 per 1000 or less than 1 per 2000 examined (Table VI).

The first complete survey of country towns and districts between July, 1952, and November, 1960, examined 152,240 persons, with a finding of 126 bacteriologically proven sufferers, a rate of 0.83 per 1000 examined (Table V). The second country survey to date has checked 35,335 persons and disclosed 47 sufferers—that is, 0.55 per 1000 (Table VII). The third country survey to date has examined 10,534 persons in mining communities, with the discovery of 12 further infectious patients (Table VIII).

Altogether, to the end of 1960 there have been a total of 623,368 compulsory examinations, and a resulting finding of 468 persons with infectious pulmonary tuberculosis, a rate of 0.75 per 1000 examined (Table IX).

During the years 1954 to 1958, the most active years of operation, the notifications of pulmonary tuberculosis, as a result of mass surveys, averaged 45% of total annual notifications. This is in accord with other States where surveys are compulsory (Rubinstein, 1956) and a much higher percentage than that obtained by the voluntary method (Bolliger, 1960).

The peak age group incidence for males was 50 to 54 years and for females 35 to 39 years (Figure I).

There was no noticeable incidence in any particular occupation in case-finding by this medium, so although occupations were recorded, they are not included in this article. However, there was evidence to suggest a slightly higher incidence of disease in Australian ex-service personnel, as these provided 126 out of the total of 468 cases. There were 30 patients from the First World War, including one female, 91 from the Second World War, including one female, and five had served in both wars—that is, 27% of the total number of cases, and 38% of the males (Table X). This figure seems high even when allowance is made for the enlistments in Western Australia, approximately 33,000 in World War I (Scott, 1936) and 87,296 in World War II (official records), but is probably explained by the age group susceptibility of males. It also suggests that this section of the community

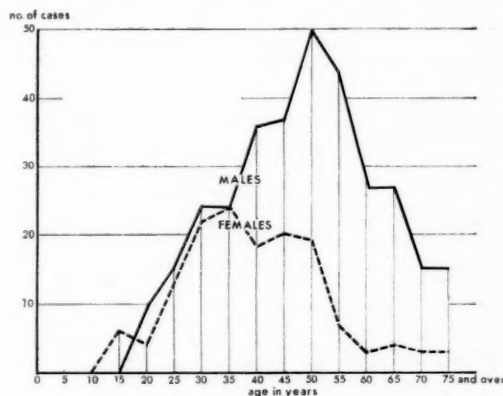


FIGURE I.

Graph showing age incidence. As the various surveys showed no pronounced difference in incidence, a composite graph is shown.

allow continuity of operation, and by the enlistment of the voluntary assistance.

The State of Western Australia is the largest of the Australian States, 975,920 square miles, comprising almost a third of the Australian Continent, and stretches 1472 miles from north to south and 1004 miles from east to west.

There are 21 municipalities and 126 Road Board districts, a total of 147 local government authorities.¹

During the years of the surveys reported on the population of the State increased from 601,000 as at December 31, 1952, to 726,000 as at December 31, 1959. The estimated number of permanent arrivals from overseas from January 1, 1950, to December 31, 1959, was 104,000, of whom 42,600 were British and 61,400 alien (this excludes any intrastate movement).²

The centralization of records at the Tuberculosis Control Branch has permitted an accurate follow-up and analysis of the results of the surveys. The results, as shown here-with, include only hospitalized patients with findings of active infectious pulmonary tuberculosis from whom *Mycobacterium tuberculosis* has been isolated, or with confirmation by pathological examination of resected lung tissue in a few instances. With the object of keeping results to a bedrock basis, only these direct findings have been included for the purposes of this article. Patients treated in hospital considered as having active lesions on the clinical and radiological findings, and those kept under out-patient observation whose lesions have been proved bacteriologically active and who have been

¹ Local Government Act, since amended (1960).

² Figures by courtesy of the Commonwealth Migration Officer for Western Australia.

¹ Annual Report, Tuberculosis Control Branch, Western Australia, 1959.

will provide a continuing source of new cases for a further decade.

The incidence in migrants disclosed by the surveys (182 of the 468 subjects, or 39% of the total, of whom 19% arrived prior to 1948 and 20% subsequent to 1948), is somewhat higher than the incidence in the Australian-born population when correlated to the population pattern. However, this is not unduly so when one considers all factors, including the difficulties of these new Australians settling in a strange environment. It suggests that the screening procedures employed abroad have been reasonably effective, when one considers the need for an active immigration policy.



FIGURE II.

Map of Western Australia, showing areas where cases of tuberculosis were located during the first survey of the State. A map of Great Britain on the same scale has been superimposed, to show the distance covered by the X-ray caravans.

There was a slightly lower incidence of disease in country districts compared with the Perth environs.

The comparison of findings between the first and second surveys has shown a much lowered incidence of infection; but this has not been invariably the case in individual centres. As was expected, the second surveys have shown a relative decrease of the amount of disease in the advanced and moderately advanced stages compared to minimal disease.

The value of visiting the smaller towns and the more sparsely settled districts of the outback has been shown by the widespread distribution of cases throughout the State, and by the discovery of sufferers from active tuberculosis in communities of only a few hundred people (Figure II; Tables I to III).

Conclusion.

Case detection of pulmonary tuberculosis by community-wide chest X-ray surveys organized on a compulsory basis has been successful all over the State of Western Australia.

There has not been a striking difference between the findings in urban and rural districts.

The results show the importance of visiting even the smallest centres of population.

The incidence of pulmonary tuberculosis in Western Australia is falling. Fewer cases of disease, and these less extensive in nature, are being found on repeat surveys.

Although mass surveys are only one aspect of case detection, they have probably contributed to this position, with a concomitant lowering of the mortality rate for pulmonary tuberculosis from 12.5 per 100,000 in 1952 to 3.3 per 100,000 in 1959.

Acknowledgements.

My thanks are due to the officers of the various local authorities for their ready cooperation in the planning of the surveys, and my acknowledgements are due to Dr. W. S. Davidson, Acting Commissioner of Public Health, for permission to publish this article.

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"UVISTAT" AS A SUNSCREEN AGENT.

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A NUMBER of tests with a new suncreening agent have been performed recently by a group of Sydney dermatologists (including the writer). This agent (2-hydroxy, 4-methoxy, 4-methylbenzophenone) is incorporated in 10% strength in a vanishing cream base under the name of "Uvistat". The tests were made on 16 normal individuals (including the dermatologists) and on 10 patients with conditions which are commonly aggravated by sunlight.

As a basis of comparison, this preparation was tested against three of the suncreening agents in the same strengths used by Stevanović (1960), who employed a quartz mercury vapour lamp as a source of radiation.

With cremor sorbolene (A.P.F.) as a base, the agents tested against "Uvistat" were salol (in a 10% concentration), pyribenzamine (in a 10% concentration) and para-aminobenzoic acid (in a concentration of 15%); the last-mentioned strength is the usual strength used as a sunscreen. "Aesculin", which Stevanović found to be the most effective of the sunscreens he tested, was not available here at the time.

All tests were performed in sunlight, of which there is usually a plentiful supply in this country. Circular apertures, varying from 1.5 to 4.0 cm. in diameter, were cut in a piece of cardboard or other material impervious to sunlight, and applied to the upper anterior aspect of the thigh or volar aspect of the forearm. Through each aperture one of the ointments containing one of the four sunscreens mentioned above, was smeared lightly onto the underlying skin, which was then exposed to

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sunlight for periods varying from three-quarters of an hour to two hours or longer. It was previously ascertained by the writer on several occasions that when five apertures were used, one of which was not covered with one of the sunscreens ointments, erythema would arise in this area before it did so in any of the others.

The results of the tests on normal individuals are indicated in Table I. It will be seen from this table that, within the margin of experimental error, "Uvistat" heads the list as the best suncreening agent (as indi-

TABLE I.
Benefit Derived from Various Sunscreening Agents by Sixteen Normal Individuals.

Benefit Derived.	"Uvistat."	PABA (15%).	Salol (10%).	Pyribenzamine (10%)
++++	13	3	0	0
+++	2	1	0	2
++	1	1	11	3
+	0	1	5	11

cated by the number of "+" signs) in the over-all picture, followed in order by PABA 15%, salol 10% and pyribenzamine 10%. Some of the results appear difficult to account for, particularly in the one case where "Uvistat" proved to have the least screening ability. This may be explained, at least in part, by the fact that some of the persons tested had become already suntanned to varying degrees. This would leave only a small untanned area on the upper anterior part of the thigh, observable for the one performing the tests. The area covered with two or more of the three other suncreening agents may have been a partly suntanned area and the area covered with "Uvistat" an untanned area, which would exhibit a greater degree of erythema where no suntan was visible. Individual variation in reactivity, degree of normal pigmentation and possibly, in some cases, the thickness of the stratum corneum may have accounted for some of the differences in the results obtained. Also the better protection provided by paraaminobenzoic acid as compared to salol in contradistinction to Stevanović's test (in which salol was the better suncreening agent of the two) could be due to the use of sunlight as a source of radiation as against the quartz mercury vapour lamp employed by him, and possibly the cream base.

Sun-Sensitive Dermatoses.

The same four suncreening agents were tested on individuals suffering from the following skin conditions:

Three patients with chronic discoid lupus erythematosus were tested. In two of these cases "Uvistat" afforded the best protection from sunlight, and paraaminobenzoic acid 15% the best in the other.

Four patients with rosacea were treated and in all four "Uvistat" was superior as a sunscreen.

In two cases of light-sensitization dermatitis "Uvistat" provided the best protection. In addition, it proved superior to three other well-known proprietary sun-protective creams, and equal to two others.

In one case (in an individual with a particularly sensitive, recurrent herpes labialis) it was applied to the lips, which were then exposed to strong sunlight for one and a half hours (this individual was a dermatologist). Normally such an exposure would have caused an acute eruption, but the "Uvistat" prevented the slightest reaction.

In one case of solar prurigo, all the ointments caused a contact dermatitis.

The above findings (although the number of patients is small) tend to be in agreement with those in normal individuals—that "Uvistat" is at least as good as, or better than, many suncreening agents in use at present. This is supported by the fact that "Uvistat" has been found to be an efficient ultra-violet light absorber for a wide range of the ultra-violet spectrum (actually over

a range of 2300 to 3500 Å), whereas, according to Wiskemann and Wulf (1959), present commercial light-screening agents mostly absorb the wave band between 2900 and 3200 Å.

Since the principal effects of sunlight on human skin are produced by wavelengths shorter than 3200 Å (Blum, 1960), these commercial light-screening agents are mostly effective. However, it is in the ranges just above and below 3200 and 2900 Å, in which the more rare effects are produced, that "Uvistat" exerts an added protective effect.

Bray (1960) has also found "Uvistat" to be an efficient protective agent against ultra-violet radiation. In addition, he has found the active ingredient of "Uvistat" to be equally efficient as a sunscreen in 4% strength in a silicone base as it is in 10% strength in the vanishing-cream type base employed in the above tests.

The "Uvistat" cream used in these tests was supplied by Ward Blenkinsop and Company Limited, of London, through their Sydney agents Edward Caminer Pty. Ltd.

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THE PREVENTION OF ANTIHISTAMINE SEDATION WITH AMIPHENAZOLE.

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DURING the "hay-fever season" each year it is a recurrent annoyance to the practitioner that a very large number of patients for whom he has prescribed antihistamines return to complain that they become sleepy. To some, this is merely a mild discomfort; but others become unable to work effectively and sometimes unable to drive a motor vehicle safely. There are many patients whose hay-fever and whose antihistamine side effects are so severe that they have the dilemma of being incapacitated by both the illness and the treatment.

The amphetamines and methylphenidate have been tried as additives to antihistamines to antagonize the sedation, but they have the disadvantage of introducing the possibility of anorectic and sympathomimetic activity as further side effects.

It was noticed by accident some time ago that amiphenazole ("Daptazole"; 2,4-diamino-5-phenylthiazole), which has hitherto been studied as a partial antagonist of morphine, seemed to antagonize the sedative effects of antihistamines. A preliminary note was published to this effect (Bruce, 1960). This paper covers the results of a further and more extensive clinical trial.

Subjects.

Subjects were screened and selected on three criteria: (a) they had a standard, severe hay-fever syndrome; (b) they obtained relief by the use of an antihistamine normally available in clinical practice; (c) they were made very obviously sleepy by that antihistamine. This selection provided 33 subjects from the staff of the University of Melbourne and their families. Fourteen of these were physicians or members of their families.

Antihistamines.

It was found that the most effective antihistamine was "Benadryl"; but if some other had already been prescribed

for a subject by his own doctor, he was left on that. The resultant distribution was 25 taking "Benadryl", five taking "Avil", two taking "Synopen" and one taking "Histidyl".

Amiphenazole.

It was established that the most effective single dose of amiphenazole was 200 mg. by mouth. This dose was taken by the subjects with each antihistamine tablet, except when an additional dose of the antihistamine was required last thing at night. The number of antihistamine tablets taken through the day depended on the degree of relief from allergic symptoms obtained, and ranged from one to three. Thus the total daily dose of amiphenazole ranged from 200 to 600 mg.

Results.

Of the 33 subjects, 30 found that the combination of amiphenazole and antihistamine gave them complete relief of symptoms with no sedation whatever. The other three tried the amiphenazole on isolated occasions only, but stated that they still became drowsy and did not feel any advantage. This gives a figure of about 91% complete effectiveness in preventing sedation.

Several points of interest emerge from this study. It appears that the amiphenazole is acting in some specific way, possibly by a receptor site competition, since if it is taken with or slightly before the antihistamine it is fully effective, but if it is taken after the subject has become sedated, the sedation persists. It is clear that amiphenazole can be used to prevent sedation, but not to reverse it. Amiphenazole is a slight central nervous system stimulant, and it was found that if 200 mg. were taken last thing at night, the subject had a short period of insomnia. This was the only indication of a direct stimulating effect. Taken through the day, amiphenazole had no side effects and produced no subjective effects. This, together with the inability to relieve already established sedation, is the reason for postulating a specific effect rather than a general, non-specific, central nervous system stimulation.

It is hoped to study this point further by Warburg techniques on preparations of brain cells.

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BETAMETHASONE ("CELESTONE") IN RHEUMATOID ARTHRITIS.

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BETAMETHASONE (16-beta-methyl, 9-alpha-fluoro, prednisolone) is a new synthetic corticosteroid produced by attachment of the methyl group to the 16 carbon atom in the beta position instead of the alpha as in dexamethasone. A pilot study has been in progress for six months at the Arthritis Clinic of the Royal North Shore Hospital of Sydney. The objects were to determine the drug's potency, the dose to be recommended, the anti-inflammatory properties and the incidence and nature of side effects peculiar to this new preparation. Eleven cases of polyarthritis have been studied. The composition of the group and basic details are shown in Table I.

There was initially no information available as to the recommended dosage, so that it was decided to regard the 0.5 mg. tablets provided as being equivalent to a 5 mg. tablet of prednisolone.

Patients taking steroids were transferred to the new drug on this basis and new patients were commenced on one to two tablets three times daily with meals. It

TABLE I.
Summary of Case Histories of Patients at Onset of Therapy.

Case Number.	Sex and Age.	Diagnosis.	Years Duration.	Erythrocyte Sedimentation Rate (mm. per hour).	DAT. ¹	Previous Treatment.	State at Onset of Therapy.
I	M.: 53	Ankylosing spondylitis with polyarthritis.	5	29	0	Chloroquine, salicylates, phenylbutazone.	Reasonable functional maintenance, prednisolone (5 mg. daily).
II	F.: 65	Rheumatoid arthritis.	22	—	128	Chloroquine, salicylates, androstanozone.	Continuous severe pain in multiple joints. Some improvement with androstanozone.
III	F.: 69	Rheumatoid arthritis.	1	15	256	Salicylates, physiotherapy.	Multiple painful joints. Advanced osteoporosis. Radiological changes mainly osteoarthritic.
IV	M.: 52	Rheumatoid arthritis.	2	44	0	"Myocrisin", salicylates, chloroquine.	General activity with severe constitutional symptoms. Healed duodenal ulcer.
V	F.: 61	Rheumatoid arthritis.	30	—	64	Chloroquine, phenylbutazone, steroid four years.	Good control with prednisolone (15 mg. daily).
VI	M.: 72	Rheumatoid arthritis.	15	19	256	Chloroquine, phenylbutazone.	Reasonable control with prednisolone (15 mg. daily).
VII	F.: 37	Rheumatoid arthritis.	9	20	16	Chloroquine, phenylbutazone.	Severe constitutional symptoms. Active disease in wrists, elbows and hands.
VIII	F.: 64	Polyarthritis with background of hormonal and psychogenic disturbances.	8	44	0	Chloroquine, phenylbutazone, "Myocrisin."	Poor control over six years of corticosteroid therapy, stress, episodes of activity.
IX	F.: 58	Polyarthritis with background of hormonal and psychogenic disturbances.	10	42	12	Phenylbutazone, salicylates, chloroquine, anabolic therapy.	Poor control, active disease in multiple joints, advanced osteoporosis and severe constitutional symptoms.
X	F.: 48	Rheumatoid arthritis.	13	20	128	Chloroquine, "Myocrisin", phenylbutazone.	Severe general pain and increasing joint destruction.
XI	M.: 57	Rheumatoid arthritis.	8	24	256	Chloroquine, corticosteroid two years.	Poor control, both systemic and articular, on prednisolone (15 mg. daily).

¹ Rose-Waaler sheep cell agglutination test; differential agglutination titre.

will be seen that five patients had been taking corticosteroids for periods of up to six years and there were six new cases. We are therefore able to assess the early effects and to make some evaluation of betamethasone's action in the five patients who have been on prolonged therapy.

This report considers the results obtained in the first six months of use of this new drug.

Anti-Inflammatory Effect.

New Cases.

The initial suppressive effect of symptoms was prompt and efficient in the new cases. After the first week, patients reported that they were "new women", "very comfortable" and "feeling much better generally". Some under instruction and some voluntarily had reduced their tablets after three or four days. The anti-inflammatory effect in joints was as quick and as satisfactory as the suppression of systemic symptoms. This was not remarkable, but comparing the results with a recent study of the other synthetic steroids, the initial results appeared to be smoother and more uniform than we had come to expect with some corticosteroids.

After intervals of seven to 12 weeks reports of a decline in the initial benefit were made in four of the six new cases. Patients were not quite so well and joints began to show a reappearance of inflammation and stiffness. Slight adjustment in the dose was effective in two of these, but in the remaining two unsatisfactory suppression continued to the time of assessment. This again is the pattern to be anticipated.

Steroid-Treated Cases.

CASE I.—The patient was well maintained on 5 mg. prednisolone daily when transferred. For two months he reported more movement, less pain and greater power in his limbs. He had a "terrific appetite", and as his weight increased from 142 lb. to 156 lb. in this time his treatment was changed to prednisolone and he reported that he was better again. Later, when transferred again to betamethasone, he was unable to say which drug he preferred. The dose ratio was 0.5 mg. betamethasone to 5 mg. prednisolone.

CASE V.—The patient was well maintained on 15 mg. prednisolone daily; her condition deteriorated when she was given methyl prednisolone (12 mg. daily), and she again responded to betamethasone when the dose was increased to six or seven tablets. After three months her condition deteriorated, and by this time she had developed marked Cushingoid changes. At six months she was showing signs of vasculitis in the finger pulps. This must be regarded as a consequence of long-term poor control of rheumatoid arthritis, and not as a manifestation of a peculiar property of this or any other corticosteroid. The dose ratio was about one to five.

CASE VI.—The patient was poorly controlled on methyl-prednisolone (8 mg. daily) and his treatment was changed to 4 tablets of betamethasone daily. His condition improved, but a shower of ecchymoses appeared. He had improved digestion and lost his headache, and his morning stiffness disappeared. The dose was reduced to three tablets daily and the improvement was maintained. The dose ratio was about one to seven.

CASE VIII.—The patient has been an unsatisfactory one during her six years of medication. She has been easily upset by physical, and particularly by mental, stress with resulting episodic deterioration in her condition. Her hormonal balance has been poor and appears to have been affected adversely by corticosteroid therapy. She stated that she felt better within 24 hours after her treatment was changed to betamethasone. Her "internal turmoil was less", and her digestion better, but she had a 50% increase in ecchymoses. Her painful tender muscles and her neuropathy were not influenced. When her treatment was changed back to prednisolone she said she preferred this, despite an increase in her irritability. The dose ratio was one to ten.

CASE XI.—This patient developed Klinefelter's syndrome during corticosteroid treatment of rheumatoid arthritis, and he had been a most difficult patient to manage. The chromosome count showed a male pattern. The control of inflammation was poor throughout; he had loss of weight.

TABLE II.
Progress of Patients during Period of Present Trial of Betamethasone.

	Daily Dose (Average) (mg.)	Erythrocyte Sedimentation Rate (Average) (mm. in 1 hour)	Morning Stiffness (Average) (Minutes)	Grip (Average) (Lb./Left)	Appetite	Weight (Average) (lb.)	Blood Pressure (mm. of mercury)	Edema	Headache	Flashes	Indigestion	Ecchymoses	Skin Pigmentation	Hypertension	Musculopathy	
															Case V.	Case XI.
At commencement.	1.85	45	180	105/100	—	132	140/86	No cases.	No cases.	2 cases.	2 cases.	3 cases.	3 cases.	5 cases.	—	Severe.
At three months.	1.21	21	10	100/140	Increased in Cases I and II.	131	—	No cases.	1 case.	2 cases.	Increased Case IV, Decreased Case VIII.	2 cases.	2 cases.	All cases.	—	Severe.
At six months.	1.05	35	20	150/110	Increased in Cases I and II.	134	147/87	No cases.	1 case.	2 cases.	1 case.	3 cases.	3 cases.	All cases.	Mild.	Severe.

marked myalgia with loss of muscle bulk, severe osteoporosis with a fracture of the neck of the femur, marked skin staining with many ecchymoses, weakness and diminished sensation in the legs and finally necrosis and ulceration of the toes and fingers. No improvement in his condition occurred, despite a considerable increase in betamethasone dosage.

Comparison with Prednisolone.

When judged on these cases, the 0.5 mg. tablet of betamethasone appeared to be slightly less effective as an anti-inflammatory agent than the 5 mg. tablet of prednisolone. One milligramme of betamethasone is equivalent to 8 mg. of prednisolone. If Case V is excluded from consideration the effect is equivalent. The numbers are too small for this figure to be significant, but it may act as a guide. As established on treatment, tablet for tablet, equal numbers of patients preferred each preparation, two were unable to decide and in one case a comparison had not been made. The usual complications of corticosteroid therapy were encountered as expected, but digestive upsets and weight gain were not a problem, with one exception in each case.

Summary.

This new synthetic corticosteroid, betamethasone ("Celestone") appears to be about as effective as prednisolone tablet for tablet—that is, 0.5 mg. to 5 mg.—and to be rather better tolerated by the patient.

Side effects have been reduced in regard to digestive upsets and to weight gain, but exceptions to this may occur.

Acknowledgement.

"Celestone" (betamethasone) was supplied by Essex Laboratories Pty. Ltd. (Australian affiliate of Schering Corporation, U.S.A.).

Reports of Cases.

INCOMPLETE TRISOMY IN A MONGOLOID CHILD EXHIBITING MINIMAL STIGMATA.

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ALTHOUGH it had been conceived that an abnormality of the chromosome complement might be responsible for the signs and symptoms observed in mongoloid subjects, it was not until the advent of improved cytogenetic techniques that the underlying basis could be demonstrated. Lejeune *et alii* (1959), Ford *et alii* (1959) and Jacobs *et alii* (1959) demonstrated that mongoloid subjects had a karyotype of 47 chromosomes and were trisomic for chromosome 21 of the international nomenclature,¹ one of the two pairs of short acrocentric chromosomes. It is considered that the most likely origin of the extra chromosome is from a gamete with 24 chromosomes brought about by non-disjunction at a reduction division during gametogenesis. However, the chromosomal abnormality could result from an error in the segregation of this autosome in

an early division of the normal zygote. Lejeune considered the former possibility more likely, and linked advancing maternal age with the increased frequency of non-disjunction.

Penrose showed the presence of a group in which maternal age was not an appreciable aetiological factor, and last year (Penrose, Ellis and Delhanty, 1960; Polani *et alii*, 1960) the underlying translocation responsible for familial mongolism was demonstrated. Another example of a translocation reported by Penrose at the same time appeared similar to that reported by Fraccaro *et alii* (1960) involving a translocation between chromosomes 21 and 22; but in addition it was noted that some cells contained a minute, Feulgen-positive centric particle.

This communication records the presence of a centric particle alone in association with an apparently normal chromosome complement in a child bearing some of the stigmata of mongolism.

TABLE I.
Chromosome Counts in Bone-Marrow Mitoses.

Chromosome Count.	Number of Cells.
Less than 46	4
46	16
47	53
92	2
93	1
Total ..	76

Clinical Record.

The child is a boy who, when he was two years old in April, 1960, measured 35.25 inches in height. He is red-headed with brown eyes, which show no Brushfield's spots. Epicanthic folds are present. He has a slightly protuberant tongue. The impression of mongolism gained in the accompanying photographs (Figure 1) is perhaps less obvious in person, and while he was in hospital there was

TABLE II.
Cells Showing a Centric Feulgen-Staining Particle.

Chromosome Count.	Number Containing S.U.I.
Less than 46	4
46	—
47	53
92	—
93	1

some division of opinion amongst the nursing and medical staff as to whether this child was in fact mongoloid. He has small ear lobes similar to those of his mother. The head is not brachycephalic. The large palmar (Figure 2) and plantar creases have normal distribution. The little fingers are slightly incurved, but no definite hypoplasia of the middle phalanges was observed in the X-ray appearance.

There is no significant family history. There were no illnesses and no X-ray exposures during the mother's pregnancy. The mother was aged 29 years and the father 37 years at the time of the child's birth. There are three normal siblings, girls aged respectively eight years, six years and eight months.

Cytogenetic Examination.

Marrow was obtained by puncture of the iliac crest and dispersed into a McCartney bottle containing Ringer's solution and heparin (1:20,000) by gentle aspiration up and down several times. Within 15 minutes it was transferred to the laboratory of the Department of Preventive Medicine,

¹ "A Proposed Standard Nomenclature of Human Mitotic Chromosomes", *Cerebral Palsy Bulletin*, 1960, Supplement, Volume 2, Number 3.

University of Sydney, and resuspended in 2 ml. of glucose saline solution and 8 ml. of human AB serum, and adjusted to pH 7.4. The leucocyte count was 1.1×10^6 and the erythrocyte count 7.5×10^5 per cubic millimetre. Incubation proceeded for two hours, and then "Colcemid" (Ciba) was injected (one-tenth volume of total culture of 0.075% "Colcemid" solution). Pre-treatment, fixation and mounting were carried out as in the method of Ford, Jacobs and Lajtha (1958), after a total of three hours' short-term culture.



FIGURE I.
Features of the child described in the text.

The squash technique described by Ford and Hamerton (1956) was used for the examination of the chromosomes. Seventy-six cells were counted and 12 fully analysed. The cells were photographed and the chromosomes cut out and arranged (as in Figure V) according to the international classification.



FIGURE II.
Hands, showing normal palmar creases.

It was found that 58 of the cells contained a centric, Feulgen-staining particle which has been designated as chromosome SU¹. It was not at first recognized, and all cells had to be later recounted. It is thought fairly certain, by inspection, that 18 of the total 76 cells counted did not contain SU¹.

Blood was also examined by the method of Moorhead *et alii* (1960), and again the majority of cells showed the centric Feulgen-staining particle. The karyotype of the parents was also examined by this method and found to be normal.

Discussion.

The explanation for the presence of the extra chromosome portion is non-disjunction in the formation of the gametes, or an error in segregation at an early stage in

the zygote leading to a chromosome complement of 47 with segmental trisomy of chromosome 21. The simplest interpretation of the cytogenetic observation is that non-

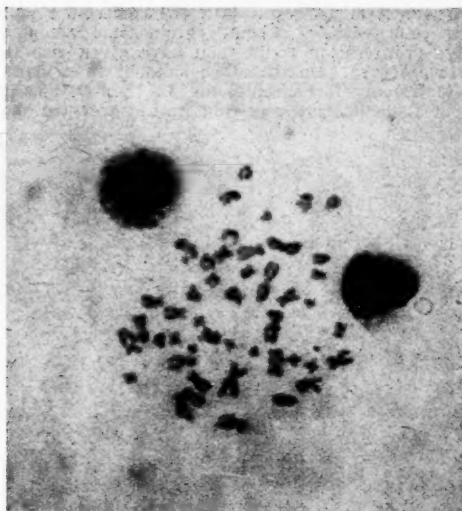


FIGURE III.
Photomicrograph of metaphase chromosomes from a bone-marrow cell ($\times 1900$). S.U.I. can be seen towards the periphery in the 1 o'clock position.

disjunction occurring in a gamete would be related closely in time to deletion of the arms of chromosome 21, presumably merely the centric particle being left. In this case

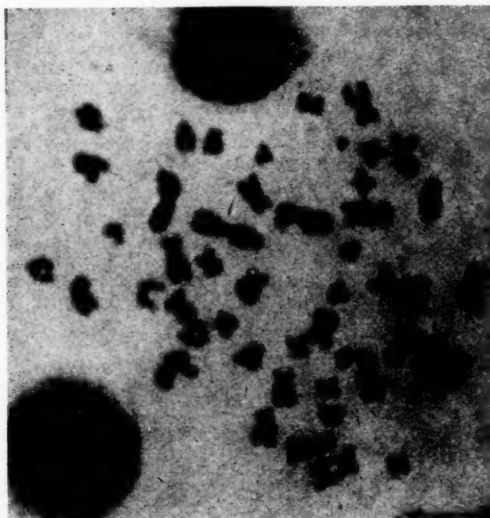


FIGURE IV.
Chromosome analysis of the cell shown in Figure III.

there would be the greatest interest in the correlation of the minimal but definite mongoloid characteristics with the small amount of extra nuclear material present.

If the abnormality of segmental trisomy for chromosome 21 had resulted from non-disjunction in either of the gametes (a familial pattern has been excluded by examina-

tion of the parents' blood), one would expect the abnormal karyotype to be present in all cells. If it is accepted that there were in fact some cells exhibiting a normal karyotype present in bone-marrow and blood, further loss of the centric portion might result in a clone or clones of bone-marrow cells with a normal chromosome complement. Selective proliferation could then have given rise to the numbers observed. On the other hand, if there had been complete trisomy for chromosome 21 (non-disjunction in either of the gametes) resulting in the accepted mongol

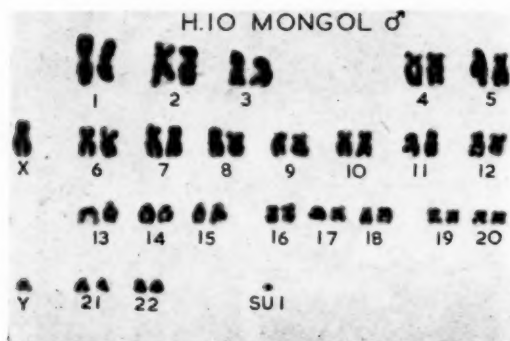


FIGURE V.

zygote, blood or bone-marrow may be the only tissue showing SU, mosaicism having occurred early in the zygote. It is hoped to clarify the latter explanation by examination of skin cultures when the child returns to Sydney later in the year.

Acknowledgements.

We are grateful to Dr. A. Waynryb and Dr. P. Stewart for submitting this child to one of us (C.W.G.L.) for examination. The laboratory work continues with the support of the New South Wales State Cancer Council and the Post-Graduate Medical Foundation within the University of Sydney. Miss P. M. Moore gave skilful assistance in the cytogenetic examination. Dr. V. G. Balmer, Medical Director, CIBA, made available a pure preparation of the "Colcemid" used in this technique.

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Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Essentials of Materia Medica, Pharmacology and Therapeutics", by R. H. Micks, M.D., F.R.C.P.I.; eighth edition; 1961. London: J. & A. Churchill Ltd. 8" x 5", pp. 444. Price: 30s. net (English).

"Clinical Endocrinology for Practitioners and Students", by L. Martin, M.D., F.R.C.P.; third edition; 1961. London: J. & A. Churchill Ltd. 8½" x 5½", pp. 276 with illustrations. Price: 28s. net (English).

"Progress in Clinical Medicine", edited by Raymond Daley, M.D., F.R.C.P., and Henry Miller, M.D., F.R.C.P., D.P.M.; fourth edition; 1961. London: J. & A. Churchill Ltd. 9½" x 6", pp. 346. Price: 50s. net (English).

"Essential Urology", by Fletcher H. Colby, M.D.; fourth edition; 1961. Baltimore: The Williams & Wilkins Company; Sydney: Angus & Robertson Ltd. 9" x 6", pp. 604 with many illustrations. Price: 88s.

"Key and Conwell's Management of Fractures, Dislocations and Sprains", by H. Earle Conwell, M.D., F.A.C.S., and Fred C. Reynolds, M.D.; seventh edition; 1961. St. Louis: The C. V. Mosby Company; Sydney: W. Ramsay (Surgical) N.S.W. Ltd. 9½" x 6½", pp. 1154 with many illustrations. Price: £14 7s.

"Pharmacology for Nurses", by J. R. Trounce, M.D., M.R.C.P.; second edition; 1961. London: J. & A. Churchill Ltd. 7½" x 4½", pp. 296 with illustrations. Price: 16s. net (English).

"A Synopsis of Contemporary Psychiatry", by G. A. Ulett, B.A., M.S., Ph.D., M.D., and D. Wells Goodrich, M.D.; second edition; 1960. St. Louis: The C. V. Mosby Company. 7½" x 5", pp. 310. Price: £3 11s. 6d.

"Kranz Manual of Kinesiology", by Clem W. Thompson, Ph.D., F.A.C.S.M.; fourth edition; 1961. St. Louis: The C. V. Mosby Company. Sydney: W. Ramsay (Surgical) N.S.W. Ltd. 10½" x 7½", pp. 160 with many illustrations. Price: £2 1s. 3d.

"Infectious Diseases of Children", by Saul Krugman, M.D., and R. Ward, M.D.; second edition; 1960. St. Louis: The C. V. Mosby Company. Melbourne: W. Ramsay (Surgical) N.S.W. Ltd. 9½" x 6½", pp. 398 with illustrations. Price: £7 3s.

"Das Carcinoma Colli Uteri Seine Prognose und Behandlung", by W. Janisch-Raskovic; 1960. Leipzig: Veb Georg Thieme. 9" x 6½", pp. 652 with illustrations. Price: DM 75.

"The Philosophic Process in Physical Education", by Elwood Craig Davis, Ph.D.; 1961. Philadelphia: Lea & Febiger. Sydney: Angus & Robertson Ltd. 7½" x 5", pp. 302. Price: 66s.

"Essential Pathology", by Roger D. Baker, M.D.; 1961. Baltimore: The Williams & Wilkins Company. 7½" x 5", pp. 638, with illustrations. Price: £5 4s. 6d. (English).

"The Medical Clinics of North America, Volume 45, Number 1: Clinical Problems in Gynecology and Obstetrics", edited by Herbert E. Schmitz, M.D.; 1961. Philadelphia, London: W. B. Saunders Company. Sydney: W. Ramsay (Surgical) N.S.W. Ltd. 9" x 6", pp. 232 with illustrations. Price: £8 2s. 6d. per annum.

"Light Coagulation", by Gerd Meyer-Schwickerath, M.D., and translated by Stephen M. Drance, M.B., F.R.C.S. (Eng.); 1960. St. Louis: The C. V. Mosby Company. Sydney: W. Ramsay (Surgical) N.S.W. Ltd. 9½" x 6½", pp. 114 with illustrations. Price: £5 4s. 6d.

"The Medical Clinics of North America, Volume 45, Number 2: Hypertension and Its Treatment", edited by Irvine H. Page, M.D.; 1961. Philadelphia, London: W. B. Saunders Company. Sydney: W. Ramsay (Surgical) N.S.W. Ltd. 9" x 6", pp. 232-493, with a few illustrations. Price: £8 2s. 6d. per annum.

"Clinical Methods of Neuro-Ophthalmologic Examination", by Alfred Kestenbaum, M.D.; second edition; 1961. New York, London: Grune & Stratton. 10" x 6½", pp. 590 with illustrations. Price: \$16.75.

"Clinical Neurosurgery", proceedings of the Congress of Neurological Surgeons, Miami Beach, Florida, 1959, Volume 7; 1961. Baltimore: The Williams & Wilkins Company. 9" x 6", pp. 278, with illustrations. Price: £6 12s. (English).

"The Actinomycetes: Volume II: Classification, Identification and Descriptions of Genera and Species", by Selman A. Waksman; 1961. Baltimore: The Williams & Wilkins Company. 10" x 6½", pp. 364, with illustrations. Price: £8 5s. (English).

"Expert Committee on Health Statistics, Seventh Report", World Health Organization Technical Report Series No. 218; 1961. Geneva: World Health Organization. 9½" x 6½", pp. 28. Price: 1s. 9d. (English).

The Medical Journal of Australia

SATURDAY, JULY 29, 1961.

CANCER DETECTION.

THOSE concerned with the treatment of cancer have long been preaching that improved results will depend on earlier detection, and much thought has been devoted to the question of how this can be achieved. Informed publicity and medical watchfulness can do a certain amount, but the net effort so far has been small, and it seems clear that something else is needed. These considerations lead naturally to the idea of the cancer detection clinic, an idea which has found favour especially in North America. Probably the greatest single advance in the early detection of cancer has been the application of Papanicolaou's work on the recognition of exfoliated malignant cells in smears and secretions from various sources, but particularly from the cervix uteri. This has shown convincingly that at least one cancer can be detected at a stage when it is almost certainly eradicable, if search for it is made at regular intervals. As carcinoma of the cervix is both relatively common and particularly distressing in its later stages, recognition of this fact has resulted in attempts to apply this knowledge in all countries with advanced medical standards. In the United States several mass surveys have been undertaken, and in some cases it has been possible to screen a remarkably high percentage of the population at risk in a limited area. Such surveys are conducted on lines somewhat similar to those of mass chest X-ray surveys, and are concerned solely with the examination of smears from the greatest possible number of people. They differ from chest X-ray surveys both in the intimate nature of the examination involved and in the greater demands for skilled personnel. In a leading article on this subject in the *British Medical Journal* three years ago it was pointed out that to carry out such surveys on a nation-wide scale would require the services of a very large number of skilled cytopathologists, doctors, nurses and specially trained technicians, and the conclusion was reached that "An adequate number of such trained staff is not available in Great Britain". So, while the screening of the entire adult female population by some such technique may be a desirable goal, it cannot be regarded as a practical approach to the problem in present circumstances. It is also open to the criticism that it is a mistake to concentrate on one particular organ to the exclusion of the rest of the patient. The analogy with mass chest X-ray surveys is not altogether sound. With the latter procedure it is

possible to screen very large numbers of people at a relatively small cost, with the employment of quite a small number of trained personnel, and at a minimum of inconvenience to the subject; also X-ray surveys are aimed at the eradication of a communicable disease. It should be remembered that enthusiasts in other departments also ask for routine examinations at regular intervals. Some proctologists have suggested that all adults over a certain age should submit to an annual sigmoidoscopy, and we understand that special clinics for this purpose have been set up in America, at least experimentally.

A more rational approach to the problem than the mass survey is perhaps the cancer detection clinic. The four articles at the beginning of this issue (page 161 *et sequentes*), describing the pioneer work of the Cancer Detection Clinic at the Royal Hospital for Women, Sydney, are a most important contribution to this topic. This clinic was established primarily for the detection of genital and breast cancers, but it was decided from the beginning that these investigations should be part of a general physical examination. Reasons for this are clearly stated by Graham Crawford in the first of the articles referred to. The patient expects a full examination; if she is reassured about one aspect, she will feel reassured about her health as a whole, and if examination has not been comprehensive, this may be false assurance. To this may be added the interests of efficiency; if we are genuinely concerned about our patient's welfare, is it possible to feel satisfied by a partial reassurance when a little extra time and trouble could complete all the essential checks? We realize that we are here on very controversial ground. One of the main difficulties about cancer detection clinics in general is that they sooner or later become bogged down in their own follow-up programme. If they are to keep faith with those who have been told to report for a yearly "check-up", they soon reach a stage when their capacity to take on new clients becomes severely limited. This has been the experience overseas, and the Royal Hospital for Women's Clinic is facing a steadily increasing load. There are many indications that the idea of a regular annual medical check-up, with cancer detection in the forefront of the picture, is gaining ground, and the question arises whether the growing number of cancer detection clinics can keep pace with the demand, or even whether it is their proper place to attempt to do so. This question is touched on in their concluding remarks both by Crawford and by David Howell (see page 163). The answer may be that the large-scale extension of cancer detection work will depend on the readiness of general practitioners to take on an increasing share of this work. The statement by the Anti-Cancer Council of Victoria, which we published a year ago,¹ may be recalled at this point. Cancer detection clinics at leading hospitals have three important functions, quite apart from the service they offer to the community. One is that of demonstrating how such work should be organized; another is their research function, both in finding answers to the many statistical and organizational questions which arise in cancer detection work, and in working out new methods of cancer detection; the third

¹ *Brit. med. J.*, 1958, 1: 696 (March 22).

² *Med. J. Aust.*, 1960, 1: 940 (June 11).

is their value as a training ground for those who may later do such work elsewhere. It is possible that the day will come when experience at a cancer detection clinic will be regarded as an essential part of the training of every general practitioner. At the present time, what proportion of general practitioners are prepared to offer their patients a regular check-up of the same quality as that offered at a well-organized cancer detection clinic? Some, especially those who are not temperamentally inclined towards routine work of a preventive nature, would reply that they have not the time. Apart from the colposcope, which is essentially an instrument for large clinics or for those who are particularly interested in this type of work, there is no reason why routine check-up for cancer detection should not be done by any general practitioner. Cervical smears for cytological examination can be taken by anyone who has taken the trouble to get instruction in the technique; chest X-ray examinations are easily arranged; the rest is covered by an adequate history and physical examination.

It is clear that the Papanicolaou smear is at the centre of the problem. Whether the attack is through mass surveys, through cancer detection clinics, through the use of the smear as an additional check in all gynaecological examinations, or through an annual check-up at general practitioner level, no single check or investigation is likely to yield such dividends as the examination of Papanicolaou smears. (As already pointed out, the use of the colposcope is likely to remain limited to special clinics and a few specially qualified practitioners.) Any interested practitioner will immediately want to know who is going to examine his smears for him. At the moment facilities are available, but they are on a rather haphazard basis. Most leading hospitals now have their own cytodetection service, and most would probably be glad to help out any practitioner who wanted to have smears examined. The services of some private pathologists are also available. However, in the near future the New South Wales State Health Department proposes to set up, at a cost of £100,000, a cytological laboratory with the primary object of providing a technical service for the examination of such slides on a large scale. Exactly how such a service will operate has not been fully worked out, and only experience will show the extent of the demand, but presumably the teaching hospitals will continue to do their own cytological examinations, while the State laboratories will cater for private practitioners and institutions which do not have their own service.

This of course raises the question as to what action should be taken when a practitioner who has taken his own smears receives a report that one is "suspicious" or "positive". It has been repeatedly emphasized in the literature on this subject that a report of suspicious or malignant cells in a smear is essentially an indication for further investigation. It is not an indication for hysterectomy. In spite of frequent repetition, this fact still needs reiteration, as a great deal of misunderstanding on this point apparently persists. Most gynaecologists would probably say that a report that a smear is suspicious is, as a rule, an indication for biopsy. However, this depends to some extent on local variations in practice. In many overseas clinics the practice is to place all

smears examined into one of five grades, ranging from "negative" to definitely "malignant"; at the Mayo Clinic the practice is to perform a biopsy in the three "pathological" grades. At the Royal Hospital for Women it is preferred to classify smears as "negative", "suspicious" and "positive". This makes for a rather large "suspicious" group, but this is countered by the technique of further screening by taking a second smear after oestrogen administration. It would appear that for the general practitioner the obvious step is to refer the patient to a special clinic or a consulting gynaecologist, especially as the quality of the biopsy specimen is important. A further point which should perhaps be emphasized is that even if a smear is reported as "negative", there is no reason for neglecting to do a biopsy if a suspicious lesion is present; "false negative" reports should be rare, but experience has shown that they can occur even in the best laboratories. The Papanicolaou smear is an important aid to cancer detection, but it is not the complete answer, and the report must be considered in relation to the other facts of the case. For this reason it is sometimes argued that the Papanicolaou smear should be used only in conjunction with the colposcope, but this would seem to restrict unnecessarily the employment of a very useful test.

It should of course be realized that clinics such as that at the Royal Hospital for Women are still the exception in Australia. The Papanicolaou smear is now a well-established technique, and facilities for examination of the smears are at last becoming generally available, but there are strong divergences of opinion as to how the work of cancer detection should be organized. In many leading clinics overseas, the taking of a smear for cytological examination is a routine part of every gynaecological examination, and some advocate that cancer detection should be developed as an extension of this service to well women who are willing to attend for a purely gynaecological check up, rather than by the setting up of special cancer detection clinics. Both views were clearly stated in the discussion which followed the presentation of the paper from the Royal Hospital for Women clinic, and which is fully reported on page 191. The issues which we have touched on in this article are still in a state of flux, and it is hoped that the papers presented in this number of the Journal will provoke further helpful discussion about them.

Comments and Abstracts.

THE SURGICAL TREATMENT OF OTOSCLEROSIS.

THREE YEARS AGO we published an article by A. B. K. Watkins¹ in which he described in simple terms the essentials of various recently introduced operations in middle-ear surgery for the treatment of deafness. He commented on the considerable effort and research that was being directed towards the surgical relief of deafness, and on the tremendous advances which had been made during the preceding few years. Towards the end of the article he stated: "New procedures, such as fenestration through the foot plate of the stapes, are being reported almost

¹ *Proc. Mayo Clin.*, 1960, 35: 508 (August 31).

² *MED. J. AUST.*, 1958, 1: 622 (May 17).

every week, and it is now uncertain what will become standard in a few years." Ten years ago fenestration was still the main operation being performed for the surgical treatment of otosclerosis. When Watkins wrote his 1958 paper the various techniques of stapes mobilization were the focus of interest; this had the great advantage of being a minor procedure compared with fenestration. However, there was a strong tendency for the stapes to seize up again, and the improvement gained was too often soon lost. The operation for fenestration of the oval window, pioneered by J. J. Shea of Memphis, Tennessee, is now receiving much attention, and in a recent issue of the *Journal of the American Medical Association* there appear two papers, one a report by J. J. Shea² on the first four years of his operation, the other by C. M. Kos,³ in which he discusses a very similar operation which he terms "vein-plug stapedioplasty". These procedures, though very exacting for the operator, are still minor to the patient, as compared with fenestration. They are performed under local anaesthesia via the external auditory meatus, and there is no exenteration of mastoid air cells with its attendant complications.

In brief, Shea's operation involves the complete removal of the stapes, and the drilling away of the otosclerotic bone around the margins of the oval window. The fenestra is then covered with a graft made from a thin piece of vein taken from the back of the patient's hand. The sound-conducting mechanism of the middle ear is then reconstructed by the insertion of a piece of polyethylene tubing 3 to 4 mm. long to take the place of the stapes, one end engaging the process of the incus, the other, bevelled, resting on the vein graft. Shea has now performed this operation over 1400 times, and he states that about 94% of his patients have achieved a hearing improvement which has reduced the air-bone gap (the disparity between air and bone conduction) to 10 decibels or less. In discussing the complications of his operation, Shea notes that the commonest cause of failure is bony closure of the fenestra after the operation. He has performed second or third operations in some of these cases, but now believes that this is inadvisable, because of the danger that further hearing loss may result. Other failures are due to a mass of scar tissue immobilizing the prosthesis. In several cases good improvement in hearing was lost after a sudden blow on the head. In such cases it was found that this had dislocated the prosthesis, and the vein graft was "beautifully healed in the oval window with absolutely no strands of scar tissue to be seen". Shea states that when he first proposed his operation many of his colleagues feared that removal of the stapes might lead to labyrinthitis or meningitis. However, with very strict aseptic technique and thorough cleansing of the external meatus Shea has found that the risk of immediate infection is very slight, and once the vein graft has healed, it protects the labyrinth as effectively as the natural round window membrane. Nevertheless, in an earlier paper,⁴ in which the technique of the operation is described in detail, he states that after the operation the patient is given one gramme of chloramphenicol daily for five days as a precaution. A risk in all such operations is that hearing may be made worse instead of better. Shea reports that this happened in only 14 of his patients, a result which he attributes in part to the fact that he never uses a chisel in middle-ear surgery. He also believes that prior interference in the form of stapes mobilization or fenestration of the horizontal semicircular canal increases the risk of further hearing loss; for this reason he rejects the view of some authors that stapes mobilization should be first tried, since it is a relatively simple procedure and if it fails the more exacting operation can be undertaken.

In discussing fenestration of the oval window in relation to other operations on the stapes, Shea states bluntly that the justification for his operation is that it works so well, and that mobilization of the stapes does not. He states that no more than 5% of the patients on

whom he had effected mobilization of the stapes more than five years ago still maintain an air-bone gap of 10 decibels or less, and thinks that this is perfectly understandable when one considers the nature of the bony ankylosis which is the basis of the lesion. He agrees that occasional patients will obtain permanent benefit from stapes mobilization alone, but states that these are few in number, and that the result cannot be predicted beforehand. The procedure of removing the arch of the stapes, pulverizing the footplate and inserting a polyethylene strut, is one which Shea has never tried, but he makes it clear that he considers it unlikely to produce lasting benefit. He states that the anterior crurotomy operation of Fowler gives quite good long-term results in older patients in whom the otosclerotic focus is localized to the anterior half of the footplate, as further extension of the process is not likely to occur, but that it is unwise to expect permanent improvement from this procedure in young patients, in whom the otosclerotic process is still active. Clearly, Shea is a firm believer in the intrinsic superiority of his own operation.

In the article accompanying Shea's contribution, Kos is in complete agreement with Shea's appraisal of the shortcomings of stapes mobilization. He gives the results of different techniques in his own hands as follows: of 715 patients on whom he had performed stapes mobilization by the indirect technique, 24% still had a hearing level of 30 decibels or better, but only 2% had normal hearing; of 305 patients on whom stapes mobilization had been effected by the "direct footplate method", 38% retained a hearing level of 30 decibels or better, and 8% had normal hearing; of 170 patients who underwent vein-plug stapedioplasty, 91% had a hearing level of 30 decibels or better and 50% had normal hearing. The last group of course includes the most recent cases, and Kos states that a complete comparison of the new technique with stapes mobilization cannot be made till a five-year period has elapsed. Nevertheless, he considers that these results are very much better than those achieved by stapes mobilization during its first year of use. Kos's operation differs from that of Shea in a number of details, the most obvious being that, instead of a piece of polyethylene tubing articulated between the incus and the vein graft in the oval window, the stapes is replaced by a stainless steel pin, the head of which is engaged in a vein plug placed in the oval window, while the other end is looped over the process of the incus. However the principle of the two operations is essentially similar, and Kos points out that the possibility of such an approach was demonstrated by Faraci sixty years ago, when he showed that the stapes could be extracted and a protective membrane made to form in its place, without damage to the internal ear. Advances in surgical technique have now made possible the application of this principle.

CHROMOSOMAL PROGRESS.

CYTOGENETICS has been a well established branch of botany for many years, but inadequate techniques have delayed the unveiling of the secrets of animal chromosomes until recently. Until 1956 the normal chromosome complement in man was still thought to be forty-eight. In that year Tjio and Levan, and the Harwell group adapting their mammalian chromosome technique developed in mice, established the human chromosome number as forty-six. Intensive research in a few centres using the bone marrow culture technique soon amply demonstrated the distinctive abnormal karyotypes in mongolism and other trisomies of the autosomes as well as the translocation involved in hereditary mongolism and the distinctive abnormal sex chromosome patterns in the intersexes. Normal findings have been reported in anencephaly, epiloia, Laurence-Moon-Biedl syndrome, neurofibromatosis, arachnodactyly, osteogenesis imperfecta, achondroplasia and gargoylism. However, recently Moorhead *et alii*¹ have developed their method for cultivating the cells of the

¹J. Amer. med. Ass., 1960, 174: 2181 (December 31).

²Ibidem: 2187.

⁴A.M.A. Arch. Laryngol., 1960, 71: 257 (February).

¹Exp. Cell Res., 1960, 20: 613.

blood, presumably monocytes or large lymphocytes, and their technique is superior to the bone marrow technique in the chromosome picture obtained. In this issue of the Journal (see page 182) Ilbery, Lee and Winn report the presence of a very small chromosome designated SU¹, presumably the result of a deletion involving chromosome No. 21 and about one-fifth its size, in association with a case of atypical mongolism. The SU¹ chromosome was only recognized with difficulty using the bone marrow technique and could conceivably have been missed in a borderline preparation. In later preparations using the blood technique facile recordings of the abnormality were made. Research in the chromosomes of malignant cells had disappointingly shown no abnormality in the chronic leukemias using the bone marrow method. The Philadelphia (Ph¹) chromosome, about half the size of chromosome No. 21, has since been identified by Nowell and Hungerford² using the technique of blood culture which they introduced.

Although the easier pickings have probably been made, it remains for further improvement in techniques in this field to bring to light more of the less obvious chromosomal structural changes. Indeed some of the conditions reported as having normal karyotypes by older methods may need reexamination. As more data assembles, the fascinating task will be the seeking of an underlying meaning and the mapping of the observed changes in the structure of certain chromosomes in relation to the changes in abnormal cells or abnormal individuals.

SHORTER ABSTRACTS.

NEUROLOGY.

CONGENITAL OCULOMOTOR APRAXIA. P. H. Altrocchi and J. H. Menkes, *Brain*, December, 1960.

The authors report a case of congenital oculomotor apraxia and review seven other cases reported in the literature. The symptoms are usually first noticed in infancy. The children show an inability to move their eyes voluntarily in a horizontal direction or to move them toward a peripheral object of attraction, despite the fact that random eye movements and vertical ocular motility are perfectly normal. In addition they all presented with curious horizontal jerking thrusts of the head, and their eyes deviated contraversively on head-turning. Difficulty in reading appears also to be part of the syndrome. Additional features that have been noted are the bilaterality and symmetry of the abnormal findings and awkwardness of gait. The actual nature and location of the lesion responsible for the syndrome are unknown. As the condition is non-progressive and benign, detailed pathological studies are not available. The authors state that the similarity between this syndrome and that described by Holmes in cases of bilateral frontal lobe lesions makes it attractive to speculate that the fault in congenital cases also lies in the frontal oculomotor centres of area 8, or in the projection tracts from them.

SUBACUTE SPONGIFORM ENCEPHALOPATHY—A SUBACUTE FORM OF ENCEPHALOPATHY ATTRIBUTABLE TO VASCULAR DYSFUNCTION (SPONGIFORM CEREBRAL ATROPHY). S. Nevin *et alii*, *Brain*, December, 1960.

The authors describe eight cases of a subacute form of encephalopathy which they consider due to cerebral vascular dysfunction. The age of onset was between 50 and 70 years. This steadily progressive disease often shows three stages of clinical evolution, an invaginate stage, lasting several weeks, then gross disturbance of cerebral function and a terminal stage in which death quickly supervenes or a prolonged vegetative state ensues. Dementia, visual failure, motor paralysis, speech disturbance, cerebellar symptoms, myoclonus and epileptic seizures form the clinical pattern. The electroencephalogram in the late stages of the disease showed generalized and periodically recurring sharp wave complexes. This was considered, though not specific, sufficiently distinctive to be helpful in the diagnosis of similar cases. The pathological changes were distinctive,

consisting of widespread loss of nerve cells in all layers of the cerebral cortex, more especially in the occipital lobes, with an associated astroglial reaction, especially in the outer layers where some of the cells resembled gemistocytic glia. There was a varying amount of status spongiosus. On account of the nature of the lesion, the presence in one case of recent softening in the basal ganglion and the absence of any evidence of a toxic or metabolic factor, it is suggested that the disorder is due to some form of vascular dysfunction without gross structural changes in the blood vessels. The authors conclude that spongiform encephalopathy is distinct from Jakob's pseudosclerosis and that there is no relationship between the two diseases.

INTERNAL CAROTID ARTERY OCCLUSION IN YOUNG ADULTS. J. G. Humphrey and T. H. Newton, *Brain*, December, 1960.

The authors present a study of 17 cases of internal carotid artery occlusion in patients under 40 years of age. Eleven of these patients had lesions adjacent to the carotid artery or had evidence of a generalized systemic illness at the time the carotid artery occlusion was diagnosed. The complications included trauma, aneurysm, tumour, pregnancy and inflammatory diseases. Hypertension and atherosclerotic involvement were noted in only one of these cases. The authors conclude that the prognosis for survival following an internal carotid artery thrombosis is better in patients less than 40 years of age.

EUGLOBULIN FLOCCULATION AT PH 7 IN THE CEREBRO-SPINAL FLUID. T. Alajouanine *et alii*, *Presse méd.*, October 29, 1960.

The authors state that in the cerebro-spinal fluid, colloidal benzoin flocculation and colloidal gold flocculation found in multiple sclerosis and general paralysis are regularly associated with an elevated gamma-globulin level; as in serum, more complex alterations in the globulins are probably the direct cause of the flocculation of colloid substances. While studying the proteins of the cerebro-spinal fluid, the authors observed when the pH was 7.1 exactly, a reversible flocculation after the addition of electrolytes. This reaction was found only in certain abnormal specimens of cerebro-spinal fluid, and they investigated its significance. They state that this simple test is of twofold interest in the study of cerebro-spinal fluid of high globulin content (for example, in multiple sclerosis, general paralysis and leucoencephalitis). (i) It allows concentration of the abnormal proteins without denaturation—a necessary stage in the study of their physico-chemical and biological properties. (ii) It seems to be as sensitive as the classical colloidal benzoin precipitation test in the first tubes, and can easily be used in conjunction with other precipitation tests. Thus it will favour more exact knowledge of the composition of the cerebro-spinal fluid, of which the clinical importance is obvious, and which is beyond the scope of available techniques of electrophoresis because of the very small concentrations found.

PSYCHIATRY.

A LONGITUDINAL STUDY OF SCHIZOPHRENIA. H. Klonoff *et alii*, *Amer. J. Psychiat.*, October, 1960.

The authors have set out to document the long-term clinical course of schizophrenia, as reflected in the present status and past history of a group of World War II veterans in Vancouver. The group consisted of 113 patients, 64 under treatment as out-patients and 54 in hospital. All patients had been hospitalized at some time or another during the 16 years covered by this study. Each patient had on an average about four "breakdowns" necessitating hospitalization during this time. It was found that 20% of the out-patients and 37% of the hospital group showed gross symptoms, e.g., hallucinations and delusions. Some, while able to exercise judgement and think in concrete terms, still continued to suffer from thought disorder, others inhibited the expression of their delusions and inappropriate feelings, still others showed gross personality disorganization. There was no significant relationship observed between the onset and the course of the illness on the one hand and the present status of health on the other. Intellectual endowment and education were found to be of some importance in the adjustment potential. The most important factor was found to be the family support, and whether the patient remained in hospital or with the community often depended

² *Science*, 1960, 132: 1497.

on this direct social support. The authors recommend that responsibility for treatment should extend beyond the period of florid symptoms. The family and community should share the rehabilitation of the patient from the commencement of the illness; there is reason to believe that many chronic schizophrenic patients can learn by progressive maturation to be self-supporting, at least in part.

DETERIORATION AFTER ELECTROCONVULSIVE THERAPY IN PATIENTS WITH INTRACRANIAL MENINGIOMA. M. M. Gassel, *Arch. gen. Psychiat.*, November, 1960.

AMONG the records of 250 consecutive confirmed cases of intracranial meningioma, in patients admitted to the National Hospital, Queen Square, London, the authors found three with a history of psychiatric disorder for which electroconvulsive therapy was given before the correct diagnosis was made. The details are briefly outlined and in each case the treatment was followed by deterioration in the patient's condition and the appearance of abnormal physical signs. The relevant literature is summarized and the few reports available illustrate the same deterioration after electroconvulsive therapy. The author comments that the mechanism of the deterioration is obscure, but that when it occurs it should be treated as presumptive evidence of a space-occupying lesion of the central nervous system.

MURDEROUS AGGRESSION BY CHILDREN AND ADOLESCENTS. W. M. Easson and R. M. Steinhilber, *Arch. gen. Psychiat.*, January, 1961.

THE authors examined seven boys who had made murderous assaults and one boy who had committed murder, and also studied their family setting. The case records are briefly reported and illustrate that, although the family relationships were varied both in character and malignity, all demonstrated that one or both parents had fostered and had condoned murderous assault. All eight children (the eldest was 16 years old) were from socially acceptable, "normal" family homes, but more intensive investigation showed abnormalities of psychopathological significance.

In their review of the literature, the authors comment that some writers have not been too diligent in their search for factors which explain motivation, and have described "normal boys" of "uniformly good" reputation who described pistols and made hysterical suicidal gestures. Most of the boys in this series had collections of knives and guns which they were allowed to retain even after several episodes of extremely violent and menacing behaviour.

In each case the child was repeatedly given to realize that his parents expected him to be physically violent, even to the point of murder. Each was emotionally closely tied to and identified with the mother in a hostile fashion; the fathers in this series were not available to their sons for healthy identification. Lack of privacy, physical over-closeness and at times the grossest seduction were repeatedly found. These boys were set the pattern of physical violence either by parental example or parental approval.

THE COMMUNICATION OF SUICIDAL INTENT. W. B. Delong and E. Robins, *Amer. J. Psychiat.*, February, 1961.

EIGHTY-SEVEN PATIENTS admitted to a psychiatric hospital formed the basis of the present study. About two-thirds had communicated suicidal intent. This tended to vary in the degree of definiteness and the repetition of the threat. The authors consider that manic depressive disease and chronic alcoholism account for the great majority of those who make suicidal threats. There was a high rate of agreement (about 80%) between the patients and other informants concerning suicide threats. The use of suicidal threat as a means of manipulating the environment was considered to be a factor only in about 7%.

HYPNOSIS IN PSYCHIATRY TODAY. M. R. Kaufman, *Arch. gen. Psychiat.*, January, 1961.

THE author believes that in order to understand the current role of hypnosis in psychotherapy it is essential to adopt a historical point of view; accordingly he briefly summarizes the main events leading to our present day use and understanding of hypnosis. He maintains that it has demonstrated its value under combat conditions; during the Okinawa campaign some 2500 patients with various forms of combat reactions were treated under hypnosis, the patients being regressed only as far as the traumatic situation. Return to duty was possible for 85%, and in only seven instances was it impossible to hypnotize the subject; in three of these the patient was psychotic. Hypnosis has

also been used by the author in five cases of status asthmaticus when all other measures had failed; in all instances there was no prior knowledge of the background history of the patients. Each patient was relieved within a relatively short period of time.

The author illustrates a danger of hypnosis with an example of a patient who was relieved of her neurodermatitis only to become psychotic. He believes that hypnosis represents a valid modality when applied as a goal-limited form of psychotherapy within the framework of psychoanalytical psychology. It has played a basic rôle in the evolution of psychoanalysis, and the author outlines how this has developed. Some psychiatrists feel that hypnotherapy is indicated for hysteria only, but others emphasize that it may be used in all neuroses and that it depends on the psychotherapeutic constellation rather than the nosological entity.

PHYSICAL MEDICINE AND REHABILITATION.

RESPIRATORY STATUS AND METABOLIC REQUIREMENT ESTIMATED FROM CARBON DIOXIDE PRODUCTION. H. J. Ralston *et alii*, *Arch. phys. Med.*, January, 1961.

THE authors state that several investigators have studied the mathematical relationship between pulmonary ventilation and oxygen consumption, but some errors of prediction are involved. Ventilation-carbon dioxide relationships may provide better predictability, and these relationships give additional information about respiratory status, including alveolar carbon dioxide tension and pulmonary dead space. An equation is given which relates tidal volume to carbon dioxide production per breath in normal subjects, and should be tested as an estimate of metabolic requirement. Values for pulmonary dead space and alveolar carbon dioxide tension, determined in hemiplegic patients by the use of this equation, are relatively low compared with those of normal subjects. Geriatric amputees, many of whom had a history of cardio-vascular disease, were found to have a lower value for alveolar carbon dioxide tension than either the normal subjects or the hemiplegics. Their dead space was within normal limits.

FUNCTIONAL ELECTROTHERAPY. W. T. Liberson *et alii*, *Arch. phys. Med.*, February, 1961.

THE authors present the results of a study which is the beginning of the development of a research programme inspired by the concept of "functional electrotherapy". This is defined as a replacement electrotherapy applied in patients with a central nervous system lesion, so that at the very time of the stimulation the muscle contraction has a functional purpose, in locomotion, in prehension or in other muscle functions. Their subjects were hemiplegics, and in the study stimulation of the peroneal nerve was synchronized with the swing phase of the gait. They describe the first attempt at functional electrotherapy. It consists in the use of a portable transistorized stimulator delivering pulses of 20 to 250 microseconds' duration at a frequency of 30 to 100 cycles per second. The current is applied to the peroneal nerve, the dispersive electrode being located over the tibialis anticus. The current is interrupted by a switch located in the sole of the shoe. The circuit is arranged in such a way that the dorsiflexion is achieved when the foot is off the floor. In some patients a carry-over of this functional electrotherapy is observed, as their spontaneous dorsiflexion seems to improve.

HOME EVALUATIONS AND THE DISCHARGE OF REHABILITATED DISABLED PATIENTS FROM HOSPITAL. M. Peszczynski *et alii*, *Arch. phys. Med.*, February, 1961.

THE authors state that one of the characteristics of the progress in rehabilitation methods is the blurring of the boundaries between the hospital and the patient's home. Some essential aspects of the physical and psychosocial atmosphere of the home are being introduced into the hospital, and, conversely, the hospital is a more integral part of the community. Home evaluations play a considerable rôle in the transition of the rehabilitated severely disabled patient from the hospital to his home. The authors review the experience gained from home evaluations made from Highland View Hospital, Cleveland. They discuss in some detail particular problems of the hemiplegic patient, the patient with a fractured hip, the double above-knee amputee, the patient with a spinal cord injury (especially the quadriplegic), and the multiple sclerosis patient with advanced disability.

The Wider View.

WITH THE DOCTORS IN RUSSIA.

I HAVE just returned from a three-week visit to the Soviet Union, with a party consisting of 26 doctors (two of them women) and nine ordinary tourists. At home the professional, political and social interests of the individual doctors and tourists varied, and this variation is reflected in some of the different views and impressions that have already been made public in the correspondence columns of *The Age* newspaper. For this and many other reasons the visit was instructive, interesting and stimulating.

Our party fell roughly into three groups: (i) Those who could see nothing but good in the Soviet world. It occurred to me more than once that there are few conventional conformists more rigid than the dedicated "comrade", especially when he is backed by a few pliable or naïve "fellow-travellers". (ii) Another group, equally inflexible and tiresome, who could see little or nothing good in the U.S.S.R. (iii) A group which retained its objectivity and critical powers, so that its members saw that in the Soviet, as in any country, there are things to admire and things to deplore. As I write this, I imagine that every member of the party will claim to belong to this third group, as I do.

We travelled under the sponsorship of the Australia-Soviet Friendship Society. One advantage of this was an appreciable reduction in fares, although I was told elsewhere that any large party could obtain similar concessions. One disadvantage was the tendency to regiment us and to prevent any deviation from a programme that had been prearranged without any consultation. Neither this Society nor Intourist was of much help in arranging particular or special medical meetings, and an official from the Ministry of Health told me that all would have been well if we had got in touch with that Ministry or one of the professional academies in advance. I strongly advise any professional group, such as teachers, doctors or scientists, to make their own special contacts before visiting the U.S.S.R. (Intourist, of course, is indispensable for ordinary tourist requirements, and the Friendship Society arranged some pleasant social meetings.) Some of us who wanted to meet certain people were told more than once that we would have to wait until tomorrow, and more than once we immediately made our own way to the institute concerned, where we received a very hearty welcome, with a mild rebuke that we should have come to see them sooner.

At this point I should like to emphasize some truisms that are almost clichés. (i) We are apt to see only what we want to see and to ignore the reverse. (ii) It is easy to make untenable generalizations on the insecure basis of limited individual experiences. Opinions are often put forward as facts. (iii) One's early background influences one's later opinions. The best way to avoid these dangers is to be aware of them, and I believe that I have reformed in this. I confess at once that I am an unrepentant capitalist who, by nature, education and experience, is tolerant and eclectic, aware of the evils and benefits of capitalism as well as those of communism.

Here, then, are some comments and impressions. The casual people that the tourist encounters were generally friendly and courteous—taxi-drivers, hotel servants, students, people in the shops and on the streets. The only cloak-room attendant who has ever helped me on with my coat was at a museum in Leningrad. As a rule tips were not looked for or expected, but were often accepted with a quiet dignity; it was pleasant to be away from the insolent and grasping demands met with in some countries. Our medical colleagues were equally friendly. Discussions of medical problems were free and lively, and they talked about their work, experiences and ideas with great gusto. They were just as keen to hear about our practices and methods. These exchanges were very useful, and many of us hope that there will be a return visit of Soviet doctors to this country. Again I would stress the neces-

sity for preliminary contact between corresponding professional bodies. No propaganda was offered to us by any of the doctors, and only a little, mainly inoffensive, from the guides. I heard more party-line platitudes from certain members of our own group than from any Soviet citizen.

There were no restrictions on our movements or on the use of our cameras. I never felt that I was in a police State, and the only policemen I saw were on traffic duty. The relatively small number of motor vehicles in the very wide streets of the large cities provided a welcome change from the congestion of our cities. There was a corresponding scarcity of petrol stations, and visitors with their own cars told me that they often wasted hours in search of petrol, most of which was not suitable for our high-pressure engines. The cleanliness of the streets and footpaths was quite striking; the cleaning was done by elderly people, most of them women using home-made birch brooms; their work was reinforced by mechanical sweepers.

Books and gramophone records are cheap, but food and clothes are relatively expensive. Most of the people seemed to be adequately but poorly clad, including the few soldiers that I saw. There was little cut or style in men's suits or women's dresses. All this was in contrast to the elaborate dressing of the ballet and opera and the formal white tie and tails of musicians.

I shall say nothing about religion, except that, while it is obviously regarded with disfavour, it is now tolerated.

Shops are closed on Monday, but are open on other week days from 11 a.m. till 8 p.m. and on Sunday from 12 noon till 6 p.m. This gives the general population a chance to do their shopping quietly and unhurriedly. There is a dearth of small cafés and snack bars and not many good restaurants are to be found, so that it was not easy to get a casual meal. I saw a number of inferior self-serve places with stand-up tables at which people were eating without any evident enjoyment or relish.

Women work with men on the roads as they do in the fields. I was told that they did this voluntarily, because the pay was good and they got the same as the men; but although it was allowed, it was not encouraged by the authorities.

Although English and other foreign books could be bought freely, it was not possible to buy any English or American newspapers unless they were of the right colour; the only English paper obtainable was *The Daily Worker*. This seems to me to be a retrograde step that can only result in loss of Soviet prestige in the eyes of friendly visitors, as it betokens uncertainty, fear and lack of confidence. This feeling was reinforced by some of the Russian magazines printed in English, which contained much crude and puerile propaganda, some pro-Soviet and some anti-Western. It all seemed strangely antithetic to the impressions made by personal contacts.

I was surprised and distressed to find that there was an active black market in dollar and sterling currency. Most of our party were frequently accosted by young men uttering the magic word "business" and then urging their offers in the best "spiv" manner. Their persistence, when we refused to deal, tried our patience and forbearance. The authorities rightly are taking action against this evil, which they frankly acknowledge, and heavy penalties were imposed on some offenders while we were there. We had many requests for chewing-gum and offers to buy our clothes; I gathered that this was not regarded as an offence. These youths, of course, were only a small percentage of the young people, mainly students, who sought our company for practice in English, to hear something about the outside world and to seek our opinion about life in the U.S.S.R. In general their frankness and intelligence made them welcome company. A chosen few of our party saw the May Day procession from the Red Square; the rest of us saw it from a good vantage spot near by, although we were disappointed at not gaining entry to the National Hotel as we had been promised. I found the first part of the procession, with its mounted rockets, military display and athletics exhibition, exciting and interesting; but this was succeeded by a long queue

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of various groups from the different regions of the Soviet Union which, to me, was as dull as the usual Labour Day, Orangemen's or St. Patrick's Day processions. For several hours there was no escape, as all roads and footpaths were barricaded; luckily a friend had his pocket chess set with him, and we had a good game (opening: Nimzo-Indian). What Richard Dimpleby saw to leave him "stunned and flabbergasted" (*Daily Worker's* report) had no such effect on me or my companions.

Before ending these general observations, I must mention that there was a dearth of fire escapes in some of our hotels and some other large buildings; at any rate, I found difficulty in locating them, and several I did see were badly placed and ill suited for their function. At the Ukrainian Hotel in Moscow I found a padlocked grill barring the way (between the ninth and eighth floors) of the only internal stairway that was evident.

As most of our party were doctors, we devoted much of our time to medical matters. As I have indicated, these activities were hampered by certain difficulties we had in meeting some of the people we had especially wished to see. However, we made fruitful visits in Moscow to the Kolesnikov Institute, the Sklifovosky Institute and the Institute of Surgical Apparatus, and in Leningrad to the Uglov Clinic and one of the small general hospitals. By and large these superior institutes, poorly housed as some of them still are, are of world standard, both in the type of work they are doing and in the way they are doing it. I was particularly impressed by the research and experimental work that I saw. At all our visits we found courtesy and good-fellowship. The same remarks apply to the Filitov Institute at Odessa and to the various institutes at Souchi. I and my colleagues agreed that more exchanges, in both directions, would be to the good. Some members of our party returned with reports of the superiority of Soviet medicine and medical services over ours. Many faulty conclusions were drawn from incomplete and insufficient evidence, and much of their talk was too obviously emotional and political. I shall not discuss these matters here, as they have already been ventilated in *The Age*. There is an excellent account of the Soviet medical services in the London *Sunday Times* of September 4, 11 and 18, 1960, by Dr. J. H. Hunt, an official of the College of General Practitioners.

To sum up: this visit has left me with a strong desire to go to Russia again and for a longer period if possible. I sensed that I was the guest of a great people, and I believe that cultivation of each other's friendship will be to the advantage of both sides. Conversely, mutual antagonism and back-biting could be disastrous to the whole world. Frequent exchanges of visits between the ordinary citizens of the east and west should make for goodwill, especially if the establishments and fanatics of both sides will subdue themselves. Then "peaceful coexistence" could become a reality.

M. P. SUSMAN.
Sydney.

Post-Scriptum: Why does it take about three weeks for mail between Australia and the U.S.S.R. to reach the recipient?

Out of the Past.

EDIBLE CLAY.¹

[From the *Australasian Medical Gazette*, January 20, 1902.]

In the annual report on British New Guinea for the year 1899 to 1900, Mr. Robert Bruce, who resides at Gebaro Island, at the mouth of the Fly River, reports to His Excellency the Lieutenant Governor on the subject as follows:

"I got a curious thing here this time. There was hanging from the roof what looked like a string of white sausages.

¹ From the original in the Mitchell Library, Sydney.

I asked by signs for them and they were brought to me. I found they looked like pipeclay, moulded with a string running through their centre, which joined the lot together. After a lot of enquiries as to its use, I found that it was scraped down with a shell and used as relish to food. I tasted it, and fancied it contained arsenic. They gave me one which, unfortunately, was lost in the boat. Lots of the natives of Torres Straits and New Guinea eat red-fat earth, which contains iron. The women of the Straits eat it when pregnant so as to make the child light skinned, etc. This is the first time I have seen white clay eaten in New Guinea."

... The earth was analyzed by the Government Analyst, and it proves to be practically a silicate of iron and alumina. ... The clay evidently contains very little organic matter in its composition—under 2 per cent. The sample was specially treated for arsenic, but none was found. A sample of the so-called "red-fat" earth forwarded to me consists of steatite, which is a hydrous silicate of magnesia.

[Extracts from a communication submitted by Mr. Rands, Government Geologist, to a general meeting of the Queensland Branch of the British Medical Association.]

British Medical Association.

NEW SOUTH WALES BRANCH: SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held on October 20, 1960, at the Royal Hospital for Women, Paddington. The meeting took the form of a symposium on "Problems of Cancer Detection". Dr. E. S. STUCKEY, President-Elect of the Branch, was in the chair.

Problems in the Conduct of a Cancer Detection Clinic.

Dr. GRAHAM CRAWFORD read a paper entitled "Problems in the Conduct of a Cancer Detection Clinic" (see page 161).

Analysis of Abnormal Smears.

Dr. DAVID HOWELL read a paper entitled "Analysis of Abnormal Smears" (see page 163).

The Place of Colposcopy in Cancer Detection.

Dr. IAN COPE read a paper entitled "The Place of Colposcopy in Cancer Detection" (see page 164).

The Efficiency of Present Cancer Detection Methods.

Dr. WILLIAM GARRETT read a paper entitled "The Efficiency of Present Cancer Detection Methods" (see page 166).

Discussion.

Dr. MALCOLM COPPLESON, in opening the discussion, congratulated Dr. Graham Crawford, who had pioneered the field of cancer detection in Australia and who was in charge of a cancer detection unit of which he must be proud. Many points had been raised during the evening, but they really constituted only a few of the problems associated with cancer detection. A fundamental point for consideration by those starting a cancer detection unit in a gynaecological hospital was which women were to be examined, and how thorough should the investigations be. At the Royal Hospital for Women, the clinic was, of course, a real cancer detection unit, in that a search was made for cancer everywhere. However, he wondered whether they had reached a stage at which that was practicable. The stimulus to cancer detection had been the advent of the Papanicolaou smear, which could detect preclinical cancer of the uterus, and as gynaecologists their prime aim was to detect those uterine cancers which had not yet produced symptoms or signs. He considered that before they examined any well women in a gynaecological hospital, the benefits available from cytology and also from colposcopy should have been given to all the in-patients and out-patients of the hospital. The reason was that the unsuspected uterine cancer yield in those women was greater than that in well women. In the clinic at King George V Hospital the yield was about nine per thousand as against four per thousand with well women, a difference also noted in many other clinics elsewhere. When once that had been done, it was the time to turn to the well women. Dr. Coppleson then asked how thoroughly they should investigate that group. He said that obviously the breasts must be included, for they

were the commonest site for cancer in women, and they were easily palpated. He asked whether they should search for the less accessible cancers, and went on to say that Dr. Garrett had shown that it was a relatively fruitless search. Such carcinomas were rarely found, and the search for them was most time-consuming. Dr. Coppelton thought that that time would be much better spent if those well women were told that they were attending a detection clinic for gynaecological and breast cancer, such as existed at King George V Hospital. During those investigations, abdominal and rectal examinations might occasionally reveal cancer in other parts, and symptoms volunteered by the patient would start investigations which might reveal cancer elsewhere. The clinic at the Royal Hospital for Women gave about 2500 new patients per year a thorough examination. He thought that it would be better employed searching perhaps 4000 new patients a year for gynaecological and breast cancer.

Dr. Coppelton then turned to some other matters. He referred to a case which Dr. Cope had mentioned, with which he himself had been associated, and which raised some points. That patient had attended the clinic at the Royal Hospital during the year and had had, on macroscopic examination, a perfectly normal cervix. Colposcopy had revealed no abnormality, but in view of two suspicious smears, admission to hospital for cervical biopsy and uterine curettage had been recommended. The patient had consulted her local doctor, who had told her not to worry, and had suggested that he should do a hysterectomy. The patient had then been referred to Dr. Coppelton by another doctor. On that occasion the smear had given positive results, and colposcopy had showed a highly suspicious area on the posterior lip of the cervix; it had proved to be an early invasive carcinoma, for which he had performed a Wertheim's hysterectomy. Dr. Coppelton said that that case highlighted one of the greatest problems which would arise when cytological examination became more readily available to practitioners. Even some gynaecologists did not yet realize the significance of suspicious and positive smear findings. Such findings did not mean for certain that cancer was present, and were not an indication for treatment, but only for a thorough search for cancer. Many women would have unnecessary hysterectomies in the near future, and others would have inadequate treatment, owing to a misunderstanding of the significance of positive cytological findings. The other point about that case was that there had been a normal colposcopic appearance on the first examination, and grossly suspicious findings on the second. At other times that position could no doubt be reversed, and one doctor would miss something which somebody else recognized; but the essential point was that if there was a carcinoma on the ectocervix, then there would be an atypical colposcopic appearance, and if it was not seen by the observer, then it was the fault of the observer and not of the colposcope. The colposcope was not an instrument which one could use without experience and interpret the findings with any accuracy. It took at least as long for a gynaecologist to become expert in colposcopy as it did for a pathologist to become proficient in cytology. Dr. Coppelton said he did not think that was the reason why that particular case was missed. In colposcopy the application of aqueous acetic acid was important, and no interpretation could be made without it. Not uncommonly, once the acetic acid solution was placed on the cervix, the appearances did not change immediately from the normal. In that particular case, for fully 30 seconds the appearance had been that of a perfectly normal cervix; then suddenly a minor change had occurred, and it had been over a minute and a half before the abnormal change had been clearly seen. Had the examination in the first instance been more prolonged, it was unlikely the lesion would have been missed.

Dr. Coppelton concluded his remarks by emphasizing the values of colposcopy. He said that for the first time a gynaecologist had the opportunity really to understand cervical lesions. If an apparently normal cervix could be the site of carcinoma, as his colleagues knew it could, then he urged them to admit that they could not look at a normal cervix with the naked eye and make any valuable comment. Most of those microcarcinomas of the cervix had a macroscopic appearance which was perfectly benign. The second point was that colposcopy could detect, as Dr. Cope had shown so well, atypical hyperplasia of the cervix. Dr. Coppelton said that, unlike Dr. Cope, he would be almost dogmatic in saying that at times that was a premalignant condition. That had been proved almost beyond doubt. Now for the first time they had an instrument which could recognize lesions not detectable by cytology, some of which would develop into cancer in five, 10 or 15 years' time.

That group of women must be thoroughly followed and adequately treated. That was the greatest advance in cervical cancer prophylaxis in recent times. The final point was the complementary value of colposcopy to cytology. Dr. Cope had said that as yet in the clinic at the Royal Hospital there had not been a case in which a negative cytological result and a positive colposcopic result had been obtained; but Dr. Coppelton assured him that it would be only a matter of time. At King George V Hospital in several thousand colposcopies he had seen several cases, and that had been so in every big clinic in Europe where a combination of those methods was used. Cytological examination failed in a significant percentage of cases. That was not the cytologist's fault. The quality of the smears differed; dryness and many other factors could be responsible for failure of detection by the smear. If one relied on cytology alone and obtained a negative result from a smear associated with a benign-looking cervix, one told the patient she did not have cancer of the cervix. Was one really justified in doing that when one did not have a method of checking it. Colposcopy provided such a check.

In conclusion, Dr. Coppelton thanked Dr. Crawford and his team again for the stimulating session on the problems of cancer detection, agreeing that the more that was done in that field the greater would be the snowballing effect. It was impossible to work out how the problems of the future were going to be handled.

Dr. Crawford drew attention to the emphasis Dr. Coppelton had placed on the rôle of colposcopy in the evaluation of the clinical pathology of the cervix. He added a further comment to Dr. Howell's evaluation of the abnormal smears after oestrin. He said that that use of oestrin had begun in the following way. He had been confronted with a large number of suspicious smears, and had thought that all those patients could not reasonably be submitted to a biopsy—especially those with an apparently normal cervix. It had been thought that if exfoliation was stimulated by oestrin a more dependable picture would appear. The results appeared to have justified the procedure. Repeat positive results were confirmed by biopsy, and so far no patient who had been "cleared" by oestrin had had further positive findings in a smear. The discrepancy between the number of Papanicolaou smears reported as suspicious and those remaining suspicious after oestrin was greater than he had anticipated. He considered that Dr. Howell had therefore confirmed the value of the procedure, despite the fact that no positive explanation could be given as to how and why it worked. Dr. Crawford then referred to two cases of carcinoma of the cervix which had been missed in the smear examination. One had been reported as a "dirty" smear, not a suspicious one. That patient had been treated by hysterectomy for fibroid tumours, and the pathologist's report had been of carcinoma-in-situ. The other patient had had a normal smear in 1952 and had not reported again for 18 months. At her second visit she had had a carcinoma of the cervix which was clinically judged in stage II. Dr. Crawford said he regarded as fortuitous the discovery of suspicious cells in cases of carcinoma of the body of the uterus or of the ovaries by routine smears.

Dr. A. C. CHRISTIE said that he would like, first of all, to make one or two comments on the figures presented by Dr. Garrett. He was rather surprised that the cancer expectancy from the date of booking to the seventieth birthday was 82 for cancer of the cervix and 59 for cancer of the body of the uterus; most figures showed, he said, that cancer of the cervix was about 10 times as common as that of the body. Secondly, he thought that the pathology department shared something in common with the booking clerk in the out-patients' department in erring on the safe side. However, it was a worry from the point of view of administration to have an excessive number of suspicious smears not confirmed by biopsy. A considerable number of doubtful smears would have to be expected. That matter was not as simple as it might at first appear. First of all, there must be considered the quality of the smears themselves and the staining of them. Even when allowance was made for perfect staining, there were still cells which were doubtful. In fact, for many years pathologists had been very reluctant to employ that technique in all; now there were more or less established criteria for malignancy, but despite that, he thought that one had to be on the safe side.

With regard to the points raised by Dr. Howell, he could not help feeling that in those two cases of ovarian carcinoma in which negative smear findings had been obtained after oestrogen administration, the possibility of chance came in.

The ovaries might not be throwing off cells all the time. In the case of the other two (the two that had been missed), he pointed out (saying that Stanley Way had brought that up on his visit to Australia) that highly differentiated squamous-cell carcinomas were very difficult to detect by cytological means. Stanley Way had actually made smears of the metastases in the nodes in those cases and had taken the smears across to America; only Papanicolaou had had his suspicions; the others had passed them as normal smears. One could see, therefore, that highly differentiated squamous-cell carcinomas could be missed on the Papanicolaou smear.

With regard to what had been said during the evening, roughly three per thousand cases had been detected (22 in 7000). That coincided with the world figure, which was about three per thousand. Dr. Christie said he did not quite know what it should have been—in other words, how many cases should have been discovered. He had spoken to Dr. Lancaster about that aspect, and Dr. Lancaster had not been quite sure. Professor McKelvey, when visiting Australia, had mentioned that it had been calculated from the statistics of causes of death for the State of New York, that three per thousand should have been picked up. Of course, it would depend on the average age of the patient and other factors. Thus they were picking up the number that they should; so he really thought that, from a cytological point of view, their work had proved its worth. The only point which was a little disappointing was the number of suspicious smears. They would no doubt, as time went on, reduce those to a minimum; but he considered that they were carrying out the main cytological function in picking up carcinomas of the cervix—in fact, almost as many as there were in the particular age groups examined.

Dr. Christie remarked, in reply to Dr. Coppleson, that when a patient came to the cancer detection clinic, it was, after all, the patient one was treating, and he could not help feeling that one ought to try to find cancer wherever it was; but he fully appreciated that trying to find a tumour on the brain, or something of the sort, was tremendously difficult—in fact, not worth while. On the other hand, it might be well worth while to perform faecal occult-blood tests, which was done in certain clinics in America, to see if one could detect more cases of cancer of the intestine. The small number actually detected in their clinic was very worrying. As could be seen, the number expected was half that of the figure for breast carcinoma and equal to that for carcinoma of the cervix.

Dr. Christie agreed with Dr. Coppleson that he had grave doubts as to whether one could detect carcinoma of the cervix with any accuracy macroscopically. He thought that that misconception was widespread, judging from what resident medical officers said when asking if he could "put this one through urgently, it is almost certainly carcinoma". He thought it was really severe cervicitis which was being mistaken for carcinoma. It looked an "angry" cervix, but that was due to an angry inflammatory reaction, not to carcinoma. He did not deny for one moment that one could detect a sloughing cervix as probably neoplastic, but he was talking about the early case of cancer. He thought the chances of picking up early cancer of the cervix macroscopically were very slim. One of the first cases he had had when he came to the hospital was that of a curetting in which a biopsy of the cervix had not been taken and, sure enough, there had been nothing wrong with the endometrium, but a fragment of carcinoma-in-situ had been removed with the curettage fragments. When the uterus had been removed it had had, on inspection, a lily-white cervix. Half the uterus had been sectioned and the other half was to be saved to show an early carcinoma macroscopically. To his horror there had been no carcinoma in the half that had been sectioned. He had been very worried, and had had to sacrifice the other half to demonstrate the carcinoma-in-situ. The point he was raising was that there had been a lily-white cervix with no suspicion of carcinoma.

Dr. M. HESLITINE asked to speak from the cytologist's point of view. She said that if one was to establish a cytology laboratory in a hospital such as the Royal Hospital, or in any gynaecological hospital, one should be prepared for what was called "a pampered laboratory". It could have no stress or strain of any kind. If one did not appreciate that fact, then one should not establish such a centre. In other words, if one was to be given increased work, then one must have increased personnel, and she had been fortunate in her own laboratory in being given increased personnel, as the work had been steadily increasing. It was quite fascinating to see the way the work was increasing in amount, coming not only from the

well women in the cancer detection clinic, but also from the honorary medical officers of the hospital (from their private cases) and from amongst gynaecological out-patients and the wards. Dr. Heseltine said that a certain number of problems would come with the smears, but she believed that most of them could be overcome quite readily. The Papanicolaou smear method for the detection of cancer was a cooperative effort, and it depended firstly on the patient, secondly on the doctor who examined her, and then on the cytologist and the colposcopist, as well as the pathologist. In addition, there should always be someone who was prepared to follow up patients who had been requested to return for repeat smears, or who had had positive findings and had failed to return. She believed that if one had a suspicious or positive smear finding, the patient should be traced and advised, and should be regarded as in the same position as a patient with a positive Wassermann reaction; the fact should be notified and the patient should be treated. The problem of following those patients and endeavouring to get confirmation on any suspicious or positive smear finding could be made interesting for the staff if each worker, on diagnosing suspicious or positive cells, undertook to look after that patient from the point of view of seeing when she was due for a repeat smear examination, or of finding out what was actually happening to her.

Dr. Heseltine turned to the use of oestrin with certain smears; she said that as Ruth Graham had pointed out, finding cancer cells in an atrophic post-menopausal smear was unusual. It was, however, useful in that case to give the patient a preparation—for example, stilbestrol for one week—and then to take a repeat smear, in which case, if those cancer cells had been in fact the real thing, they would still be there, and the parabasal cells would have become cornified. If, however, the suspect cell had not in fact been a cancer cell, it would have become a cornified cell and it would be easy to give a diagnosis on that smear. Dr. Heseltine herself had had an example of that in a smear sent in from a woman aged 66 years, who had, because of her cardiac condition, been given radium for fibroid tumours some years before; that had resulted in some adhesions at the top of the vagina so that the cervix could not be visualized. The smear had been degenerate and unsatisfactory, but it had been thought that there were possibly cancer cells present. The patient had been given stilbestrol for a week and another smear had been taken. There had been very little difficulty in that instance in diagnosing cancer cells. Subsequently at operation the patient had been found to have an adenocarcinoma of the body of the uterus.

Dr. Heseltine said that she had been interested in the expected number of cases of cancer of the cervix quoted (2.5) and the fact that 15 had been found in Dr. Howell's series. She took it that that was a question of invasive carcinoma and carcinoma-in-situ, and that the higher number was due to the early cancer or carcinoma-in-situ.

Dr. Garrett, in reply to Dr. Heseltine, said that the expected figures had been calculated on the New Zealand incidence of invasive carcinoma in all stages. He thought it was purely invasive from the statistician's report of mortality and morbidity from carcinoma in New Zealand, and that they were related to the ages of patients attending and the likelihood of a diagnosis of carcinoma in the 12 months following attendance at the cancer clinic. The other figure of 15 was his own, which included all cancer.

Dr. Heseltine admitted that she had not been working very long on Papanicolaou smears, but she said that she did feel confident that a number of patients were being rescued who would later have come in the invasive stage of carcinoma—stage I, II or even III. She did know that over the past year in the laboratory there had been 36 unsuspected cases of cancer of the cervix, discovered by the use of Papanicolaou's method and the colposcope. That included all the material going through her own laboratory, which came from private cases of the hospital's honorary medical officers, from the gynaecological out-patient department, from the wards and from the cancer detection clinic at the hospital, as well as a few cases referred from outside doctors and from the country. Colposcopically, most of the patients with positive or suspicious smear findings had had something to show when examined, but the exciting thing, of course, had been when a "positive" smear was found and nothing could be seen on the ectocervix with the colposcope. Often the cytologists had been able to suggest that the cancer was in fact further up the canal, owing to the presence of a number of vacuolated cells in the smear. One thing her team had been very careful to do, when those particular cells had been seen, suggesting a lesion high up

the canal, was to write it down on the individual work card; but that information had not been put in the report. Naturally, if one did not write it down, no one would believe it later on when one was proved to be correct. The biopsy material obtained from those patients with positive smear findings had become increasingly superb from the histologist's point of view, and very good cone biopsies were now being obtained in most cases. She thought that that was really a very good example of the cooperation between the cytologist, the colposcopist, the clinician, the patient and the pathologist, in the detection of early cancer.

Dr. Garrett, in reply to Dr. Christie, said, concerning the figures from New Zealand (the figures concerning carcinoma of the cervix and the body of the uterus and the figures expected) that the death rates were calculations worked out upon the ages of the patients attending the clinic. The figures which Dr. Christie referred to were for the whole of life and not those of the women attending the clinic.

Dr. Howell said that he was sorry that Mr. Stanley Way was not present to hear Dr. Coppelton himself, but that one thing he had learnt from the meeting at Stawell Hall was to keep something back, and he had kept something back from this analysis. The first thing was that of those 132 smears which were "clear", 25% had been, in fact, atrophic and suspicious. All the patients had been post-menopausal. That might explain why "Cestrogenine" rendered the smear normal. The second thing was that he would like Dr. Coppelton to comment on an article which Ciba had put out on the early diagnosis of carcinoma of the cervix, and in which there was a long and detailed analysis by a German pathologist who had sectioned cervixes of patients in various age groups, and had found that in people aged over 40 years the squamo-columnar junction receded up the canal, and it was of course under the squamo-columnar junction that most carcinomas first appeared. In the commentary on that paper another gynaecologist from Vienna had said that that was the very reason why colposcopy was of limited value in people aged over 40 years. The squamo-columnar junction receded up the canal out of sight, and that would explain the case which Dr. Stanley Way had used (he thought a little unfairly) against Dr. Coppelton at the meeting at the Stawell Hall, and also Dr. Heseltine's case. It was found only on cone biopsy.

Dr. Coppelton said that the squamo-columnar junction was a macroscopic and pathological term. Colposcopy showed that it was rarely in the expected position at the external os at the entrance to the cervical canal. With the commonly occurring conditions—ectopic columnar epithelium and transformation zone or healing erosion—the junction could be far out from the external os. In reply to Dr. Howell, he said that not all carcinomas of the cervix began at the squamo-columnar junction. He had seen several early carcinomas in eccentric positions well away from that junction. He agreed with the statement that the squamo-columnar junction receded up the canal in older women. In parous women under the age of 40 years one practically never saw a colposcopically normal cervix. There was usually some degree of ectopic columnar epithelium or transformation zone on the ectocervix. In post-menopausal women that was not the case, and one usually found squamous epithelium extending right up to the external os. He would always put that down to the fact that healing of the transformation zone had occurred. Colposcopy did not detect carcinoma in the endocervical canal except if there was a patulous os and one could see right into the canal. Cytology was the only method that would detect such cases.

PROFESSOR H. M. CAREY said that his colleagues in New Zealand were very indebted to Dr. Crawford for the work he had done, and had been wondering whether they should have been doing something similar on the other side of the Tasman. On the basis of the data that had been presented, they would probably continue to apply their present philosophy, which differed from that practised in Australia because their circumstances were different. In New Zealand the total cost of cancer detection was borne by the taxpayer; therefore they had to utilize an approach which would produce the maximum benefit for the maximum number with the minimum of effort and the minimum of resources and finance. Consequently, rather than trying to develop specialized cancer detection clinics, their policy had been to encourage every general practitioner as well as every specialist to take a cervical smear and, when indicated, an endometrial smear, in every case in which a vaginal examination was done for any reason. If, as the result of

publicity, the patient came specifically for that purpose, well and good; but they maintained and taught that it should be part of a routine gynaecological examination, and that meant that it was done as a routine in the gynaecological out-patient clinic, in the obstetric booking clinic and in the doctor's surgery—whenever a vaginal examination was indicated. As a result of that policy, with the facilities shown in the photograph circulated during the evening, and with six girls trained to do the screening, they had been able during the previous year to process 20,000 smears. They had had 84 "surprise positive" results. The average cost per smear had been 7s. 6d. That had given a fairly high return for a rather limited effort. They hoped eventually to reach the stage at which they would be able to take a smear from every woman in New Zealand between the ages of 30 and 50 years, perhaps once every five or 10 years, and in that way, they might be able completely to eliminate, for practical purposes, death from carcinoma of the cervix.

Professor Carey then turned to the New Zealand figures quoted by Dr. Garrett. He said that most of the results were under-estimates as far as New Zealand was concerned, with the exception of those for carcinomas of the cervix and body, which they had checked by going themselves to most of the centres in New Zealand. The figures quoted were for clinically diagnosed carcinoma; preclinical cases had been omitted.

Dr. Coppelton had mentioned that, in a discussion of that nature, one should concentrate on points of disagreement, and Professor Carey wished to take up one or two points which Dr. Coppelton had thrown into the discussion. The differences were perhaps differences in terminology only, but he disagreed with the contention that one should not pay too much attention to the well woman because the incidence of cancer amongst gynaecological patients was so much higher. The difference was more apparent than real. It was a question of what was meant by "surprise positive". In the experience of himself and his colleagues in New Zealand, a higher incidence of "surprise positives" came from general practitioners than from their own clinic. Their gynaecological clinic had the lowest "surprise positive" rate of any of the material examined in the laboratory—about three per thousand as against four per thousand from other sources. If there was the faintest clinical suspicion of carcinoma on the part of the clinician he would recommend the patient for a biopsy, and even though the smear came back labelled positive, the smear was not given the credit for the diagnosis, and therefore the case was not classified as having been detected by cytology. They considered also that there was a place for endometrial cytology, and he wondered if any particular thought had been given to that approach in Australia. Dr. Jamieson, who had been working in Professor Carey's department, had shown that by cytological methods it had been possible to pick up 80% of endometrial carcinomas, and he would be interested to know whether Dr. Crawford thought that technique warranted inclusion in his over-all programme. He also extended a very warm invitation to Dr. Coppelton to visit New Zealand in order to convince New Zealanders that colposcopy was really worth while.

DR. J. G. FURBER asked Professor Carey if the 80% of endometrial positive results picked up had been from patients with symptoms or signs.

Professor Carey replied that in the initial phase of the investigation, which had been done to determine the reliability of the method, they had examined cases detected by other methods. They had found that the ordinary cervical cytology (posterior fornix smear and cervical scrapes) picked up 50% to 60% only, but that they could detect 80% by means of an endometrial aspiration.

DR. K. S. RICHARDSON made some comments on the well woman. He said that it was extraordinary how many women said that they were well and had no gynaecological symptoms. When asked "Have you got a discharge?" they answered "No", and on inspection one would find quite a thick, purulent, mucous discharge from the cervix. The question "Have you any trouble with your water?" received the answer "No, doctor"; but one would find stress incontinence. Women thought that that was part of their heritage as child-bearers. What Dr. Richardson wanted to know from the team was what steps they would take to treat a patient with a cervix which was eroded and was the site of chronic cervicitis, which might have some hyperplasia and some thickening at the junction, when the results of the smears and colposcopy were negative. Dr. Richardson said he did not know how far to go with those people. He did not know how many of them should have their cervixes treated, whether they should all have conization diathermy or not. He wanted to know what the team did with that type of

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case, in which the lesion looked the potential forerunner of cancer—the grossly hyperplastic cervix with chronic cervicitis. What was the mode of action in treatment of those cervixes?

Dr. Crawford said, in reply to Dr. Richardson, that many of the cases cited by Dr. Richardson produced doubtful smears; his routine had been to take second smears after the administration of oestrin. Those patients whose cervixes showed erosion with some obvious pus coming from the os, or those whose cervixes showed abundant pus in the smear, were considered as suffering from chronic cervicitis and were treated. The post-menopausal erosion was regarded with suspicion. He thought that probably, with the advent of colposcopy, any degree of epithelial hyperplasia should be included in any definition of cases requiring treatment.

Dr. Cope added that analysis of those 1200 cases showed there were about 80 cases, about 6%, in which treatment had been recommended. Those patients had not complained of vaginal discharge, but on specific interrogation they had admitted having a slight discharge, and examination revealed a degree of cervicitis which required treatment. They had been recommended for diathermy.

Dr. Howell said that nearly 70% of the 132 smears cleared by oestrogen administration had been from cervixes classified as exhibiting chronic cervicitis. Whether that meant that they should have been treated, he wondered too; but those patients, having had second smears taken, had been followed up for five years, and had not developed carcinoma of the cervix. He did not know therefore whether one should have treated them actively for the specific reason of preventing cancer.

Dr. Crawford said that of the 7500 patients, 667 had been classified as having chronic cervicitis. He thought that those present had gained a very considerable amount from the discussion. Professor Carey's excellent cytology screening service certainly induced his envy.

Dr. IDA SAUNDERS added her thanks to those of the other speakers. She said that she admired Dr. Crawford for his excellent work, as cancer detection clinics were a little like fashions in women's clothes. Cancer detection had had a very hard time establishing its fashion and had been subjected to a lot of adverse criticism. Dr. Crawford had kept on for many years despite that criticism, and she wished to congratulate him on his effort.

Dr. Stuckey, from the chair, thanked the speakers and those who had taken part in the discussion. He said that he had been interested to hear the various differences of opinion on that topic, such as would occur in all branches of medicine.

Correspondence.

CONGENITAL MALFORMATIONS AND MATERNAL RUBELLA: PROGRESS REPORT.

SIR: Dr. Pitt (MED. J. AUST., June 17, 1961) is to be congratulated on his definitive article. At last the facts appear to be well documented.

Unfortunately Dr. Pitt's conclusions and your editorial will be accepted as incontrovertible as the facts on which they are based. You state dogmatically that: "It is in fact now perfectly clear that, even in the first few weeks of pregnancy, the majority of children escape any serious damage, and most of the defects which do occur are treatable." This is an over-statement. Out of five cases at risk in the first four weeks of pregnancy, the majority (three) are affected, and all have cataracts and cardiac defects, and one is mentally defective. Anybody who thinks that unilateral congenital cataracts ever achieve useful vision in the aphakic eye after operation has never treated one, and I have not met a cardiac physician who is complacent about the surgical results in these children.

A tragedy possibly even greater than blindness is to be born deaf and dumb. At least three out of 12 cases at risk in the second month of pregnancy have this affliction. Even in the less severe cases treatment is far from satisfactory, and very few of these children grow up to lead normal lives.

If I may be allowed to rephrase your editorial: "It is in fact now perfectly clear that in the first four weeks of pregnancy the majority of children sustain serious damage, and in the second month approximately one third. Most of the defects which do occur are not amenable to cure, but some are partially salvagable."

The legal justification for advising termination of a pregnancy is that anxiety will damage the prospective mother's health. Dr. Pitt's retrospective survey on this subject is defective for two reasons. The first is the inherent fallacy of retrospective surveys, which he has been instrumental in exposing. The second is that mothers were reassured on the conclusions of his earlier survey, which he now admits were too optimistic. It is obvious that the problem of whether to advise termination is still a very real one in the first two months of pregnancy. Those who have believed in the past that termination is sometimes justified will find that this survey supports their belief, but gives shorter and more definite time limits than was hitherto possible.

Yours, etc.,

137 Wickham Terrace,
Brisbane.

MARK HARRISON.

July 6, 1961.

POLIOMYELITIS VACCINATION.

SIR: In view of Dr. Bazeley's eminence in the field of virology, and in the absence of a statement from Dr. Bazeley himself, I feel loath to use the Canadian-made Salk vaccine. I am sure that all general practitioners must share my apprehension at the thought of using the new batch of vaccine while it still remains condemned by a colleague of Salk himself. Meanwhile my patients will go without polio vaccine, as they have since December, 1960. Except in rare cases, quadruple antigen is, as yet, of no use to a community partly immunized by triple antigen (or is encephalitis from a "booster" of pertussis vaccine a myth?).

Yours, etc.,

240 Penshurst Street,
Willoughby,
New South Wales.
July 11, 1961.

C. R. WATSON.

SIR: The comments of July 11 by Dr. C. R. Watson concerning the Canadian-made Salk vaccine are quite misleading. On July 4, I announced that this vaccine imported from the Connaught Laboratories had passed all safety tests prior to bottling. I am at a loss to understand the statement giving rise to apprehension that "it still remains condemned by a colleague of Salk himself". Quadruple vaccine is, of course, recommended for children under two years of age, and the cryptic remark concerning cases of encephalitis, admittedly rare, following pertussis vaccine is not understood.

Yours, etc.,

Parliament House,
Canberra,
A.C.T.
July 17, 1961.

DONALD A. CAMERON,
Minister for Health.

ELECTRICAL ANÆSTHESIA.

SIR: In the June issue of *The Journal of Surgical Research* (William Saunders & Co.) will be published a detailed report on electrical anæsthesia. This information has been kindly supplied to me by Professor James D. Hardy, of Mississippi University Medical Centre, Jackson, U.S.A. It appears possible that the development of electrical anæsthesia may supersede inhalation and intravenous narcosis. The occasional unfortunate toxic collapse with the latter would be avoided, and surgical anæsthesia may become a still safer procedure.

Yours, etc.,

48 Oxford Terrace,
Unley,
South Australia.
July 3, 1961.

C. RICHARDS.

THE MANAGEMENT OF TETANUS.

SIR: We should like to make a brief reply to the letters of Dr. Dwyer and Dr. Hickie (MED. J. AUST., May 13, 1961), and of Dr. Wood and Dr. Mackay (MED. J. AUST., June 17, 1961), on the management of tetanus.

Over the years, confusion rather than clarity has resulted from the many claims made for one régime or another in the treatment of this disease. One reason for this has been a succession of reports of single cases and of small uncontrolled series on which it is not proper to base therapeutic claims. It is in fact doubtful whether an adequately large and carefully-planned series could appear from countries, such as Australia, where tetanus is an uncommon disease. This is why the paper written by one of us (B.S.C.¹) appeared without figures. It was furthermore pointed out by the writer that these régimes at present used at Royal Prince Alfred Hospital are not rigid, and no claim was made that they were necessarily the best. Furthermore, the emphasis was on approach and principles which might help those unaccustomed to dealing with the disease, and which certainly have wider application in other fields of medicine and surgery. An analysis of the results from Royal Prince Alfred Hospital since 1957, when chlorpromazine was first used, will shortly be published; but for the reasons mentioned above we think this will be of more interest than value, and certainly not a plea for any particular form of therapy.

It is possible to conduct effective clinical trials in tetanus where adequate numbers of cases are available. One such recent study (Brown, Mohamed, Montgomery, Armitage and Laurence²) showed clearly for the first time in man the value of a large dose of antitoxin in clinical tetanus. The same workers are carrying out further trials to determine the optimum dose of antitoxin and to assess the effect of tracheotomy. It is our firm belief that only with such an approach will real progress be made in the management of this disease. Little can be achieved by uncertain assumptions based on a few cases, or on a small uncontrolled series.

Yours, etc.,

Tetanus Unit,
Royal Prince Alfred Hospital,
Missenden Road,
Camperdown, N.S.W.
July 11, 1961.

B. S. CLIFTON.
R. S. PACKARD.

"INSULCOTS" IN VICTORIAN HOSPITALS.

SIR: At the regional conference of the Hospitals Commission held in Melbourne in May, Professor Townsend stated in his address—and I quote from a report in *Your Hospitals*: "The Consultative Council on Maternal Mortality felt that Insulcots should be provided only in hospitals of 250 beds or more, where the staff was experienced in their use and where expert maintenance service was readily available."

Such a statement coming from a responsible body as this Council is amazing and ludicrous, and shows a gross ignorance of nursing ability in country hospitals. Can the Council possibly have statistics to show that the premature baby nursed in a small hospital "Insulcot" fares worse than its equivalent in a 250 bed hospital "Insulcot"? If not, then the Council should apologize to the majority of mid-wifery nurses in small hospitals scattered throughout the State of Victoria. On second thoughts, it is probably not necessary to do so. Most would have treated it as a joke in any case.

Yours, etc.,

Rochester,
Victoria.
July 14, 1961.

L. W. NOTT.

PRIMARY ENURESIS.

SIR: I was pleased to see an extract of Muellner's article in *Modern Medicine*, November, 1960, and to read the "Current Comment" on "Primary Enuresis", which appeared in *THE MEDICAL JOURNAL OF AUSTRALIA* dated June 10, 1961. Both articles rightly emphasized the reduced bladder capacity of the bed-wetter who, after urological investigation, has been classified as suffering from primary enuresis—that is, a normal child free of central nervous system lesions and urological abnormalities, and who has a sterile urine. Once the reduced capacity has been demonstrated by the child, the parents can understand that their offspring's bladder is just not big enough to store the entire urine output of the night, and that bed-wetting results, since

their child has also failed to acquire the habit of awakening when the bladder is full.

My attention was first drawn to this important relationship in 1953 by Mr. A. R. C. Higham, F.R.C.S., of the Institute of Urology, London. Since that time my approach to treatment of these cases has been identical with the second paragraph of the article mentioned in *THE MEDICAL JOURNAL OF AUSTRALIA*. The day-time training increases the capacity and develops their control. The capacity is checked each week-end, not daily. "Probanthine" helps and is prescribed. Bed-wetting cures itself within six to nine months. The difficult patient is the mental defect or the child too young to fully understand and cooperate.

The onset of urinary infection sometimes converts a previously normally-trained child to a bedwetter. The urinary infection may pass unnoticed. Eradication of infection, if still present, and bladder training, usually suffice.

It is important to stress to the parents that cure takes months, and understanding and encouragement are required on their part.

Yours, etc.,

87 Wickham Terrace,
Brisbane.
July 7, 1961.

R. P. YAXLEY.

TETANUS TOXOID.

SIR: When I was in England in 1947, formalized tetanus toxoid was considered to be obsolete, and a complete change-over to aluminium-precipitated toxoid was being made. It was several years after this that A.P.T. was introduced into Australia; but the formalized toxoid is still retained, on the grounds that it gives more rapid protection against tetanus. Is there really any proof of this?

I note that the private manufacturing chemists make only A.P.T., but for the doctor's bag we are forced to carry formalized toxoid.

Yours, etc.,

Carnarvon,
Western Australia.
July 4, 1961.

S. C. S. COOKE.

AIR TRANSPORT OF SOME CASUALTIES.

SIR: I would like to call the attention of members of the Royal Flying Doctor Service and practitioners of the interior to a very real risk in evacuating casualties such as penetrating eye wounds and head injuries involving brain haemorrhage.

If the plane is non-pressurized—most Cessnas and D.C.3's are such—it is really essential to instruct the pilot to fly at no more than 2500 ft. altitude, otherwise there will be gaping of the eye wound with possible loss of contents and intraocular haemorrhage. The same goes for some deep head wounds involving brain matter. The well known phenomenon vacuum headache in the air sinuses is already well known. Pressurized civil aircraft, such as the Friendship, Electra, Viscount, etc., are safe at any altitude, as the cabin is usually pressurized to 3000 ft. level. After all, it is a worse tragedy to have an eye or a life lost through rapid and high altitude evacuation.

Recently I had occasion to explain this up country, and we preferred to evacuate the eye case (penetrating wounds, prolapse of iris and intraocular haemorrhage) by car 400 miles to Perth at about 40 m.p.h. The eye was saved, despite loss of time.

Yours, etc.,

Padbury House,
170 St. George's Terrace,
Perth.
July 7, 1961.

P. J. DALY.

AN AUSTRALIAN MEDICAL ASSOCIATION.

SIR: Abjuring the word "democracy" and adhering to fact and logic, may I present:

Point 1: There are 4500 members of the B.M.A. in New South Wales. Only 1900 of them belong to local associations. Local associations' views are thus not those of the majority of members. (Round figures from report of N.S.W. Branch Council.)

¹ MED. J. AUST., 1961, 1: 618 (April 29).

² Lancet, 1960, 2: 227.

Point 2: The Federal Executive occasioned the convention of various delegates to consider details of the structure of a proposed new constitution. Adequate discussion of the need for a new organization has not really taken place.

Point 3: Moreover, through the failure of Federal (and some State) Councils—despite the legality of their steps—to elicit the views of those whom they purport to represent, the majority of the profession are unaware of the Executive's speed and direction (or apathetic because their voice has been denied)—e.g., a former president of the K.D.M.A. at a special general meeting attended by the Federal Secretary, suddenly realized what was happening, challenged: "Do you mean, Dr. Hunter, that the new Constitution and organization is a *fait accompli*?" It was, of course, even then—in September last year, and the Federal Secretary had to admit it.

Conclusions: (a) Legitimate doubt exists as to whether the actions of the Federal Council are related to the views of the majority of members, for these have never been obtained. (b) Only by a referendum on major issues (e.g., that there be no Federal Assembly, etc.)—not on paragraphs of small print—and by no other means—can the views of the majority of members in these momentous matters be obtained. (c) The time is available for such an adequate referendum, but the body of members, and individual Councils, lack the power to obtain it. (d) Thus the onus is upon the Federal Executive to arrange a suitable referendum, to allow for the first time the voice of the body of members to be heard, and thus remove an avoidable blot on the conception of the new Australian association.

"It is a solecism of power to think to command the ends without enduring the means."

Yours, etc.,

R. I. MEYERS,
(In private capacity.)

64 Clanville Road,
Roseville,
New South Wales.
July 7, 1961.

Sir: In reply to the letter of Dr. Hugh T. McDonald in your Journal of July 15, 1961, I wish to clarify one point in reference to the Memorandum and Articles of Association of the Australian Medical Association. The inclusion of any particular policy of the Association in such Memorandum and Articles could in no possible way preclude any present or future Government from introducing any legislation in relation to such a policy.

The Association once created will have every opportunity to formulate and implement its policy to meet the wishes and the needs of its members.

Yours, etc.,

J. G. HUNTER,

Federal Council of the British General Secretary.
Medical Association in Australia,
135 Macquarie Street,
Sydney.
Undated.

THE HYPERVENTILATION SYNDROME.

Sir: The article on "The Hyperventilation Syndrome" (Journal, July 15) by Dr. Barry Christophers drew attention once more to the frequency with which this symptom is encountered in practice. It is natural that patients referred to a specialist will be preselected by the general practitioner, and I accept that the number of cases of the hyperventilation syndrome seen in a psychiatric practice might be out of proportion to the number seen in general practice. I cannot help but be amazed, nevertheless, at the number of cases which are referred with various psychiatric labels, and a rough guess would put the figure at over 200 per year. Of course, it could be held that if one has "a thing" about any particular syndrome one will tend to see, correctly or incorrectly, more of that syndrome, and I will be prepared to publicly admit that one-third of the 200 might be misdiagnosed, which still leaves about 140 or three per week. (Privately I will admit no such thing, of course.)

I am unable to suggest any common predisposing cause. There is no obvious correlation between sex, age, intelligence, economic status, environment or other factors and the hyperventilation syndrome in my practice, though a large-scale survey and appropriate statistical treatment would no doubt illustrate some significant correlations.

Frequently some traumatic experience is blamed for the appearance of the syndrome; but just as frequently no such event has occurred. In the former one often hears of the condition described as "delayed shock" and, in the latter, as "nerves" or some other vague label. Once the condition is given a label, the patient believes he is suffering from a specific disorder. He expects relief by the appropriate treatment of that disorder. Sometimes he is told "there is nothing wrong", which only aggravates his problem as he is sure the doctors are not careful enough, do not know or care enough, or sometimes that they are aware he has some serious disorder and will not tell him. Investigations such as tests of thyroid and heart function, which inevitably produce normal or equivocal results, further enhance his anxiety, and he has to face the fact that he has some serious disorder which has baffled the doctors.

The next step is that he works out his own solution on the basis of unconscious conflicts. He believes he will die in one of the attacks, as his heart or brain will "give out". He may think that the human mind cannot stand such repeated attacks of anxiety, and that he will go mad. Perhaps he fears he may do something which will draw attention to himself, and finally he fears, possibly stimulated by some newspaper report, that he will harm himself, his wife or children. It does seem that the anxiety, which is related to the hyperventilation attacks, awakens conflicts and ambivalent feelings which otherwise would not become conscious. This is, of course, an over-simplification of the underlying dynamics, and other psychiatrists will (I hope) bear with me.

If the patient had no nervous condition before the onset of the hyperventilation, he certainly develops one as a result of this condition and, I should add, because of failure to recognize it for what it is, because of "labels" which divert attention from the true nature of the condition and because of statements to the effect that he is normal; which do nothing but increase his anxiety in the next attack. The anxiety features will mask the basic hyperventilation syndrome, and the clinical picture will be a mixture of those symptoms due to alkalosis and those due to anxiety.

Simple reassurance and explanation is often sufficient, though it may need to be repeated. It would not be advisable for inexperienced persons to deal with signs of the unconscious conflicts which now pervade his "conscious mind"—e.g., fear of harming others.

If medication is given, it should be stressed that it is purely for symptomatic relief rather than the condition *per se*. The treatment outlined by Dr. Christopher is adequate in most cases, though I have not found it necessary to resort to the use of the plastic bag. Overall the treatment should be explanation and reassurance, simple procedures quite within the scope of any practitioner, and it should only be necessary to refer those patients for psychiatric attention in whom there are coincident psychological problems, or in whose cases a secondary depressive or anxiety state has supervened.

Dr. Christopher's article will do a power of good if it only achieves the elimination of diagnoses such as "delayed shock" "nervous collapse" and other unscientific labels. Practitioners should read again the sections headed "Discussion of Symptoms" and "Differential Diagnosis".

Yours, etc.,

195 Macquarie Street,
Sydney.
July 17, 1961.

CARL RADESKI.

Post-Graduate Work.

THE MELBOURNE MEDICAL POST-GRADUATE COMMITTEE.

PROGRAMME FOR AUGUST, 1961.

The Melbourne Medical Post-Graduate Committee announces that the following programme has been arranged for August, 1961.

Country Courses.

Bendigo.—On Friday, August 4, at the Bendigo Base Hospital, at 8 p.m., Dr. T. H. Hurley will discuss "Pyrexia of Unknown Origin". The local secretary is Dr. M. Clark, 98 Mitchell Street, Bendigo.

Yallourn.—On Saturday, August 12, at Yallourn Hospital, the following course will be given: 2.30 p.m., "Common Ear, Nose and Throat Conditions in General Practice—Diagnosis and Management", Mr. George Swinburne; 4 p.m., "Management of Behaviour Problems in Children", Dr. W. S. Rickards; 8 p.m., "Recent Advances in Pediatrics", Professor Vernon Collins. Each lecture will be followed by discussion. The local secretary is Dr. C. Bridges-Webb, 20 Kaye Street, Traralgon.

Warrnambool.—On Saturday, August 26 (note altered date), at the Warrnambool Base Hospital, the following course will be given: 3.45 p.m., "Diagnosis and Treatment of Retention of Urine", Mr. J. B. Somerset; 5.15 p.m., "The Place of Tranquillizers in Therapy", Dr. Guy Springthorpe. The local secretary is Dr. R. R. Sobey, 6 Spence Street, Warrnambool.

Ballarat.—On Thursday, August 24, at the Ballarat Base Hospital Board Room, at 8.15 p.m., Dr. S. C. Fitzpatrick will speak on "Hydatid Disease". The local secretary is Dr. I. C. Goy, 22 Rippon Street, Ballarat.

Fees.—The fees for the above-mentioned courses are at the rate of 15s. per lecture, but those who have paid an annual subscription to the Committee are invited without further fee.

Flinders Naval Depot.

At Flinders Naval Depot, on Wednesday, August 16, Mr. Keith Bradley will speak on "Cerebral Functions". This lecture is being given by arrangement with the Royal Australian Navy.

GENERAL PRACTITIONERS' COURSES.

Medicine and Surgery.

The following courses in medicine and surgery will be given at Prince Henry's Hospital.

Monday, August 28: 9 a.m., "Head Injuries", Mr. J. B. Curtis and Mr. K. Langford; 11 a.m., "Common Problems in Dermatology", Dr. Eric H. Taft; 2 p.m., "Auto-Immune Disease", Dr. R. Strang and Dr. J. Funder; 4 p.m., "Chronic Bronchitis", Dr. D. R. Gauld.

Tuesday, August 29: 9 a.m., "Blood Dyscrasias", Dr. I. S. Epstein and Dr. D. Forster; 11 a.m., "Common Problems in Ophthalmology", Dr. W. D. Counsell; 2 p.m., "Antibiotics", Dr. H. W. Garlick and Mr. A. J. R. Davidson; 4 p.m., "Common Problems in Gynaecology", Mr. R. G. Worcester.

Wednesday, August 30: 9.30 a.m., "Steroid Therapy", Dr. H. I. Jones and Dr. H. D. Breidahl; 11 a.m., "Resuscitation in the Child and Adult", Dr. L. E. G. Sloan and Dr. J. P. Morris; 2 p.m., "Recent Advances in Cardiology", Dr. Allan Wynn and Mr. L. Grigg; 4 p.m., "Medical Emergencies", Dr. S. A. Sewell.

Thursday, August 31: 9 a.m., "Jaundice", Mr. Frank Burke, Dr. H. W. Garlick and Dr. J. Mackenzie; 11 a.m., "Radiology", Dr. A. E. Piper; 2 p.m., "Peripheral Vascular Disease", Mr. S. F. Reid and Dr. J. R. E. Fraser; 4 p.m., "Leg Ulceration", Mr. Allan Beech.

Friday, September 1: 9 a.m., "Arthritis", Dr. G. McEwen and Mr. W. G. Doig; 11 a.m., "Rheumatic Diseases", Dr. G. McEwen; 11.30 a.m., "Recent Advances in Diabetes", Dr. J. R. Stawell; 2 p.m., "Depression" and "Thymoleptics", Dr. P. G. Reynolds; 4 p.m., "Hypertension", Dr. E. E. K. Bottomley.

The fee for this course is £9 9s., and enrolments should be sent to the Committee by August 15.

Demonstrations at the Eye and Ear Hospital.

All medical practitioners are invited to attend without fee demonstrations which the honorary staff will conduct at the Royal Victorian Eye and Ear Hospital on Saturday, September 2, at 9.30 a.m. Mr. Walter Williams and Mr. D. P. O'Brien will present cases illustrating common ear, nose and throat problems, including those of sinusitis, nasal obstruction, deafness and the discharging ear. The programme will be introduced between 9.30 a.m. and 10 a.m. by Mr. John Thomson and Mr. G. L. Gray, and the demonstrations will follow. At 11.15 a.m., Dr. Kelvin Lidgett will give an illustrated lecture on common eye conditions. This will be combined with a quiz session of questions and answers.

Post-Graduate Week at the Royal Children's Hospital, Carlton.

The staff of the Royal Children's Hospital will conduct a post-graduate week from Monday to Saturday, September

4 to 9. There will be four full-day sessions at the Royal Children's Hospital and a one-and-a-half-day meeting at the Royal Society Hall, 8 Latrobe Street, Melbourne. The full-day sessions at the hospital from Monday to Thursday inclusive are intended as a refresher course in paediatrics for general practitioners and school medical officers. There will be a registration fee of £2 2s. for this period, to cover the cost of lunches and morning and afternoon teas. The meeting all day Friday and on Saturday morning will be a more specialized paediatric meeting, to which all are welcome. A separate fee of £1 1s. is payable for this meeting, to cover the cost, including catering. A detailed programme is available from the Committee.

Gynaecology and Obstetrics Course at the Royal Women's Hospital.

From Monday to Friday, September 11 to 22, the Royal Women's Hospital Clinical School will conduct a full-time course in gynaecology and obstetrics for general practitioners, consisting of lectures, demonstrations, ward rounds and quiz sessions. Residence at the hospital is available. The tuition fee is £14 14s., payable to the Committee. Board and lodging, at £7 10s. per week, is payable to the hospital.

COURSE IN NEUROPATHOLOGY.

If there are sufficient candidates, Dr. Ross Anderson will conduct a series of five lectures in neuropathology at 7.30 p.m. on dates to be announced—possibly from late July. The fee is £5 5s., payable in advance, and enrolments should be sent to the Committee as soon as possible.

SYMPOSIUM ON CANCER OF THE PROSTATE.

A symposium on cancer of the prostate will be held in September. Details will be announced shortly.

RECORDED LECTURE.

The following has been added to the Committee's library of 10 in. microgroove disks, accompanied by 2 in. by 2 in. slides, and may be borrowed on request without fee: "Cancer of the Colon", a symposium conducted by the Melbourne Medical Post-Graduate Committee; nine short lectures by Mr. E. S. R. Hughes, Dr. J. D. Hicks, Dr. P. J. Parsons, Mr. A. R. Kelly, Dr. A. E. Piper, Dr. I. R. Mackay, Mr. S. F. Reid, Mr. Alwynne Rowlands and Dr. E. V. Keogh; eight disks, 204 slides (approximately two and a half hours).

ENROLMENTS.

Enrolments for all courses described above should be made with the Melbourne Medical Post-Graduate Committee on their prescribed form, accompanied by the fee.

ADDRESS.

The address of the Committee is 394 Albert Street, East Melbourne, Victoria. Telephone: FB 2547.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

Refresher Course in Obstetrics and Gynaecology.

The Post-Graduate Committee in Medicine in the University of Sydney announces that a refresher course in obstetrics and gynaecology will be held at The Women's Hospital, Crown Street, Sydney, from Monday to Friday, August 28 to September 1, 1961. A detailed programme will be published shortly. Enrolments are limited to 10 post-graduate students in residence and 14 attending as external students. Fees are £8 18s. 6d. (including board and residence) or £6 6s. (external attendance). Early application, enclosing remittance, should be made to the Course Secretary, The Post-Graduate Committee in Medicine, Herford House, 188 Oxford Street, Paddington. Telephone: 31-0671. Telegraphic address "Postgrad Sydney".

SEMINARS AT ROYAL PRINCE ALFRED HOSPITAL.

SEMINARS are held at the Royal Prince Alfred Hospital, Sydney, on Fridays from 1.15 to 2.15 p.m., in the Scot Skirving Lecture Theatre. The programme from July 28 to November 10 is as follows:

July 28, Gastro-Enterology Section, "Genetics and the Gastro-Intestinal Tract", Dr. A. Skyring.

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August 4, Neurology Section, "Impression of Neurology in U.S.S.R. and U.S.A.", Dr. L. Rail; August 11, R.P.A.H. Medical Officers' Association Reunion—special seminar—"Ovarian Neoplasm", Professor H. Ulfelder (by invitation); August 18, no seminar; August 25, Endocrine Section, "Hypopituitarism", Professor J. E. Caughey, University of Otago, Dunedin, New Zealand (by invitation).

September 1, "The Complications of Diabetes", Professor Derrick Dunlop, University of Edinburgh (by invitation); September 8, Thoracic Section, "Some Problems of Lung Cancer", Dr. H. M. Rennie, Mr. Rowan Nicks; September 15, Cardiology Section, "Cardiology Abroad", Dr. E. J. Halliday; September 22, Paediatric Section, "Anemia in Infancy and Childhood", Dr. M. Harris (possibly there will be a change and Professor K. Donald of Edinburgh will give a seminar on this date); September 29, Renal Section, "Current Trends in Pyelonephritis", the Renal Unit.

October 6, Cardiology Section, "Surgical Treatment of Coronary Artery Disease", Dr. Dwight Harken, Harvard Medical School, Boston, U.S.A. (by invitation); October 13, Psychiatry Section, subject to be announced, speaker probably Dr. Murray Jackson; October 20, Dermatology Section, "Cutaneous Manifestations of Drug Reactions", Dermatology Department; October 27, Gastro-Enterology Section, "Protein-Losing Gastro-Enteropathies", Dr. Douglas Piper, Royal North Shore Hospital (by invitation).

November 3, Thoracic Section, "Pulmonary Embolism; Dr. D. Halmagyi (by invitation), Dr. J. Ryan, Dr. Peter Harvey; November 10, Neurology Section, "The Surgery of Occlusive Vascular Disease in the Neck", Mr. G. K. Vanderfield.

years, and decreases all the time, owing to the tremendous amount of financial resources and energy spent on research and the active competition between pharmaceutical manufacturers. However, most of the new substances used in pharmaceutical specialities throughout the world are created in a limited number of countries. By coordinating the information provided by these countries on the quality examination and introduction of the new substances, it should be to a certain extent possible for the World Health Organization to obtain and circulate general methods and specifications of direct use for the quality control of pharmaceutical preparations produced and imported by its member States. This suggestion was discussed recently in Warsaw at a European technical meeting on the quality control of pharmaceutical preparations called together by the European office of W.H.O. The conference was attended by 30 pharmacological experts, governmental control authorities and representatives of drug manufacturers. It reviewed the present situation in Europe, where the number of pharmaceutical specialities and preparations available to the physician and the public varies greatly from country to country. For instance, Belgium and Switzerland have each more than 30,000 different pharmaceutical specialities on the market. On the other hand, Denmark and Poland have kept the number of pharmaceutical preparations available to the prescriber to less than 2000, and in other countries where the production and distribution of pharmaceuticals are nationalized, comparatively small numbers of pharmaceutical substances may be placed at the disposal of the physician. The work of the meeting is expected to be of assistance to governmental authorities dealing with the introduction of pharmaceutical preparations, with the organization of national control authorities and with the adequate training of personnel for pharmaceutical quality control.

Notes and News.

Quality Control of Pharmaceutical Preparations.

Well over 100 new pharmaceutical substances are introduced into therapeutics every year, producing in turn countless mixtures and pharmaceutical forms on the market. Their average life may be generally between two and five

International Rehabilitation Programme in Morocco.

Dr. M. G. Candau, Director-General of the World Health Organization, recently issued a statement on the occasion of the completion of the International Rehabilitation Programme in Morocco. He said that the completion after 18 months of the international phase of the rehabilitation programme for Moroccan victims of paralysis due to food-oil

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED JULY 1, 1961.¹

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	1	2(2)	5(3)	..	1(1)	..	..	..	9
Anchylitis
Ancylostomiasis	1(1)	..	..	..	1	..	2
Anthrax
Bilharziasis
Brucellosis
Cholera
Chorea (St. Vitus)
Dengue
Diarrhoea (Infantile)	2	4(4)	1(1)	..	..	..	..	..	7
Diphtheria
Dysentery (Bacillary)	1(1)	..	..	2(2)	..	1	..	4
Encephalitis	1(1)	..	..	1(1)	..	..	..	..	2
Filaria
Homologous Serum Jaundice
Erythema
Infective Hepatitis	80(34)	44(27)	10(6)	15(9)	6(4)	6	..	5	175
Lead Poisoning
Leprosy
Leptospirosis	5	..	..	..	..	..	5
Malaria	1(1)	2(1)	..	..	..	..	..	3
Meningococcal Infection
Ophthalmia
Ornithosis
Paratyphoid
Plague
Polymyositis	1	..	2(1)	..	..	..	..	..	3
Pyrexial Fever	1	..	..	..	..	..	..	1
Rabies	28(6)	..	1	2(2)	..	..	..	31
Scarlet Fever
Smallpox	12(3)	16(11)	2(2)	4(4)	1(1)	..	1	1	36
Tetanus	2	..	1	..	..	..	3
Trichinosis	2(1)	..	..	..	2
Tuberculosis	7(6)	23(18)	24(12)	1(1)	10(5)	1	1	..	67
Typhoid Fever	1	..	..	..	..	..	..	1
Typhus (Flea- and Tick-borne)
Typhus (Louse-borne)
Yellow Fever

¹ Figures in parentheses are those for the metropolitan area.

poisoning was a cause of satisfaction to all concerned in that undertaking, and in particular the Moroccan Ministry of Health, the League of Red Cross Societies and the World Health Organization. When in September, 1959, an increasing number of cases of paralysis of unknown origin appeared in Morocco, the Government urgently asked WHO assistance in establishing the cause. Within three days WHO experts began work on the spot, and together with the Moroccan health authorities, they quickly established that cooking oil adulterated with a mineral oil containing tri-ortho-cresyl-phosphate was responsible. Subsequently WHO entered into partnership with the League of Red Cross Societies in mobilizing the international assistance needed for a vast rehabilitation programme for the victims of all ages. It was gratifying to think that Morocco would have benefited, not only from the rehabilitation of many thousands of citizens who would otherwise have been incapacitated to a greater or lesser degree, but also from the training given by international experts to Moroccan medical staff, who had been able to assist the Red Cross personnel and could now take over on their departure and continue giving the long-term treatment still required in certain severe cases. Great praise was due to the doctors, physiotherapists, nurses and other health staff, most of them provided by Red Cross and Red Crescent Societies, who had so unsparingly given their service and had worked alongside the Moroccan health authorities to carry out the programme which was now completed. The World Health Organization was most happy to have been associated with that endeavour.

A Japanese Honour for Sir Macfarlane Burnet.

Her Majesty the Queen has granted permission for the acceptance and restricted wearing of the award of the Order of the Rising Sun, 2nd Class, conferred by His Majesty the Emperor of Japan on Sir Macfarlane Burnet, O.M., of Melbourne. A notice to this effect appears in the *Commonwealth of Australia Gazette*, No. 57, of July 13, 1961.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Mitrofanis, Christos, M.B., B.S., 1959 (Univ. Sydney), 28c Flinders Street, Taylor Square.

Chok, Thomas, M.B., B.S., 1961 (Univ. Sydney), Mater Misericordiae Hospital, Waratah.

Bassett, Duncan James, M.B., B.S., 1956 (Univ. Sydney), General Hospital, Port Moresby, Territory of Papua and New Guinea.

The undermentioned have been elected as members of the New South Wales Branch of the British Medical Association: Evans, David Joseph, M.B., B.S., 1961 (Univ. Sydney); Lawrence, Donald Elwell Hewetson, M.B., B.S., 1961 (Univ. Sydney); Gonski, Alexander, B.Sc., 1940 (Univ. Witwatersrand), M.B., B.Ch., 1943 (Univ. Witwatersrand), F.R.C.S., 1948 (Edinburgh); Markowski, Julian, M.D., 1937, licenced under Section 21A of the *Medical Practitioners Act*, 1938-1958; Mooy, Myles John, M.B., B.S., 1960 (Univ. Sydney); O'Sullivan, Dudley Joseph, M.B., B.S., 1960 (Univ. Sydney); Raphael, Margaret Betty, M.B., 1940 (Univ. Sydney); Scott, Ronald Dalkeith, M.B., B.S., 1960 (Univ. Sydney); Roncevic, Allan Leonard, M.B., B.S., 1960 (Univ. Sydney).

Deaths.

THE following deaths have been announced:

KINNA.—Alwyn Leslie Kinna, on June 29, 1961, at Stockton, New South Wales.

WALLACE.—Thomas Irby Wallace, on July 7, 1961, at Brisbane, Queensland.

BULL.—Noel Tracey Bull, on July 9, 1961, at Melbourne.

SANTORO.—Soccorso Santoro, on July 10, 1961, at Genoa, Italy.

Diary for the Month.

- AUGUST 1.—New South Wales Branch, B.M.A.: Organization and Science Committee.
- AUGUST 2.—Western Australian Branch, B.M.A.: Branch Council.
- AUGUST 2.—Victorian Branch, B.M.A.: Branch Meeting.
- AUGUST 3.—South Australian Branch, B.M.A.: Council Meeting.
- AUGUST 8.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
- AUGUST 10.—New South Wales Branch, B.M.A.: Public Relations Committee.
- AUGUST 11.—Queensland Branch, B.M.A.: Council Meeting.
- AUGUST 14.—Victorian Branch, B.M.A.: Finance Sub-Committee.
- AUGUST 15.—New South Wales Branch, B.M.A.: Medical Politics Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): Medical Officers to Sydney City Council. All contract practice appointments in New South Wales. Members are requested to consult the Medical Secretary before undertaking practice in dwellings owned by the Housing Commission.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

Editorial Notices.

ALL articles submitted for publication in this Journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations, other than those normally used by the Journal, and not to underline either words or phrases.

Authors of papers are asked to state for inclusion in the title their principal qualifications as well as their relevant appointment and/or the unit, hospital or department from which the paper comes.

References to articles and books should be carefully checked. In a reference to an article in a journal the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of article. In a reference to a book the following information should be given: surname of author, initials of author, year of publication, full title of book, publisher, place of publication, page number (where relevant). The abbreviations used for the titles of journals are those of the list known as "World Medical Periodicals" (published by the World Medical Association). If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full data in each instance.

Authors submitting illustrations are asked, if possible, to provide the originals (not photographic copies) of line drawings, graphs and diagrams, and prints from the original negatives of photomicrographs. Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary is stated.

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